FCC Test Report

FCC Part 22,24 / RSS 132,133

FOR:

A Wireless Data Card providing always on protection of mobile laptop data

MODEL #: Alcatel – Lucent OA3541 with
Sierra Wireless MC 8790 Wireless Modem

Alcatel – Lucent
300 Mountain Ave.
Murray Hill, New Jersey 07974
USA

FCC ID: RUT-OA3541
IC-ID: 1737G-OA3541

TEST REPORT #: EMC_ALCAT_015_08001_FCC22_24_rev4
DATE: 2008-10-02

Certificate # 2135.01

Bluetooth Qualification Test Facility (BQTF)

LAB CODE 200203

FCC listed: A2LA accredited

IC recognized # 3462B

***CETECOM* Inc.**
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CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

Table of Contents

1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations and in compliance with the applicable criteria specified in Industry Canada rules RSS132 and RSS133.

Company	Description	Model #
Alcatel – Lucent	**A Wireless Data Card providing always on protection of mobile laptop data**	**Alcatel – Lucent OA3541**

Technical responsibility for area of testing:

Date	Section	Name	Signature
2008-10-02	EMC & Radio	Marc Douat (EMC Project Engineer)	Marc Douat I am approving this document

This report was prepared by:

Date	Section	Name	Signature
2008-10-02	EMC & Radio	Satya Radhakrishna (EMC Project Engineer)	Satya Radhakrishna I am the author of this document

The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	**CETECOM Inc.**
Department:	**EMC**
Address:	**411 Dixon Landing Road Milpitas, CA 95035 U.S.A.**
Telephone:	**+1 (408) 586 6200**
Fax:	**+1 (408) 586 6299**
Responsible Test Lab Manager:	**Lothar Schmidt**
Responsible Project Leader:	**Satya Radhakrishna**
Date of test:	**2008-08-13 to 2008-08-14**

2.2 Identification of the Client

Applicant's Name:	**Alcatel – Lucent**
Street Address:	**300 Mountain Ave.**
City/Zip Code	**Murray Hill, New Jersey 07974**
Country	**USA**
Contact Person:	**Bradford R Kaupp**
Phone No.	**720 363 5764**
e-mail:	**Bradford.kaupp@alcatel-lucent.com**

2.3 Identification of the Manufacturer

Same as above client.

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name:	**Omni Access 3500 Nonstop Laptop Guardian**
Description:	**A Wireless Data Card providing always on protection of mobile laptop data**
Model No:	**OA3541**
FCC ID:	**RUT-OA3541**
IC ID:	**1737G-OA3541**
Frequency Range:	**824.2MHz – 848.8MHz for GSM 850** **826.4MHz – 846.6MHz for FDD5** **1850.2MHz – 1909.8MHz for PCS 1900** **1852.4MHz – 1907.6MHz for FDD2**
Type(s) of Modulation:	**GMSK, 8-PSK**
Number of Channels:	**124 for GSM-850, 299 for PCS-1900, 300 for WCDMA**
Antenna Type:	**Diverse 110° flip-up antenna**
Max. Output Power:	**Conducted: testing was not performed at Cetecom Inc. see report MC8790 FCC parts 22 24 test report.pdf** **Radiated : see page 11, please** 29.98dBm (0.995W) @ 848.8MHz : ERP 28.26dBm (0.669W) @1880MHz :EIRP 23.83dBm (0.242W) @826.4MHzFDD5 :ERP 28.17dBm (0.656W) @1907.6MHzFDD2 :EIRP

3.2 Identification of the Equipment Under Test (EUT)

EUT #	TYPE	MANF.	MODEL	SERIAL #
1	EUT	Alcatel – Lucent	OA3541	J3180163

3.3 Identification of Accessory equipment

AE #	TYPE	MANF.	MODEL	SERIAL #
1	Laptop	Lenovo	R6li	7650CDU
2	AC Adapter	IBM	92P1113	11S92P1113Z1ZACW5B TOS3 REVE

4 Subject of Investigation

All testing was performed on the EUT listed in Section 3. The EUT was maximized in the X,Y, Z positions , all data in this report shows the worst case between horizontal and vertical polarization for above 1GHz.

The EUT carries a pre-certified EGPRS module with FCC ID# N7NMC8790. This test report contains full radiated testing as per FCC 22/24 on the EUT with the pre-certified EGPRS module. All conducted measurements are covered under test report# MC8790 FCC parts 22 24 test report.pdf

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations and Industry Canada rules RSS132 and RSS133. The maximization of portable equipment is conducted in accordance with ANSI C63.4.

5 Measurements

5.1 RF Power Output

5.1.1 FCC 2.1046 Measurements required: RF power output.

Power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on circuit elements as specified. The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

5.1.2 Limits:

5.1.2.1 FCC 22.913 (a) Effective radiated power limits.

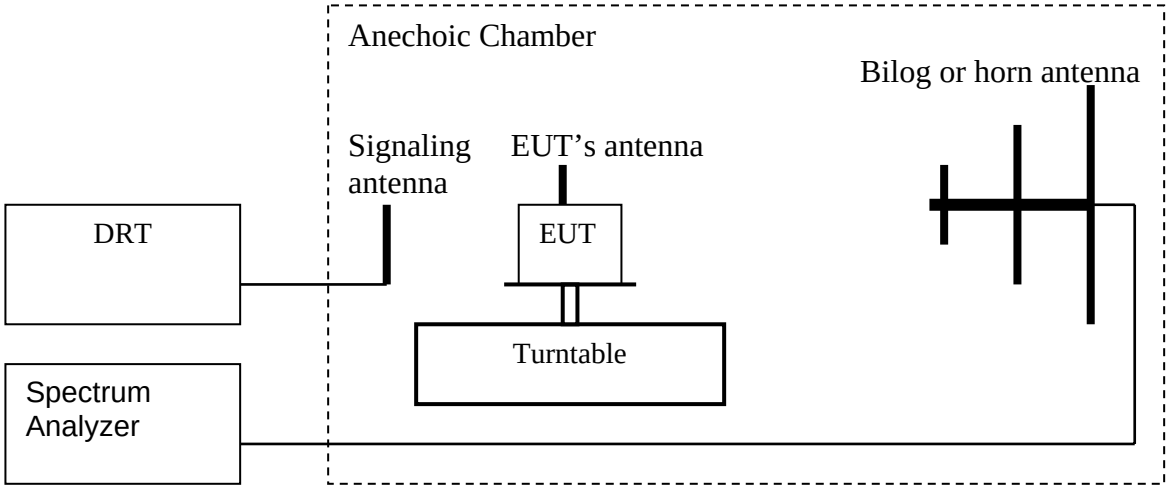
The effective radiated power (ERP) of mobile transmitters must not exceed 7 Watts.

5.1.2.2 FCC 24.232 (b)(c) Power limits.

(b) Mobile/portable stations are limited to 2 Watts effective isotropic radiated power (EIRP).
(c) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement over the full bandwidth of the channel.

5.1.3 Radiated Output Power Measurement procedure:

Based on TIA-603C 2004
2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.

2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the ERP using the following equation:
   ERP (dBm) = **LVL** (dBm) + **LOSS** (dB)
8. Determine the EIRP using the following equation:
   EIRP (dBm) = **ERP** (dBm) + 2.14 (dB)
9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band. **Spectrum analyzer settings = rbw=vbw=3MHz**

(**note:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4, 7 and 8 above are performed with test software.)

5.1.4 ERP Results 850 MHz band:

Power Control Level	Burst Peak ERP
5	≤38.45dBm (7W)

Frequency (MHz)	Effective Radiated Power (dBm)	
	GPRS	EGPRS
824.2	26.77	25.14
836.6	29.2	26.76
848.8	29.98	25.96

5.1.5 EIRP Results 1900 MHz band:

Power Control Level	Burst Peak EIRP
0	≤33dBm (2W)

Frequency (MHz)	Effective Isotropic Radiated Power (dBm)	
	GPRS	EGPRS
1850.2	24.87	24.48
1880.0	28.26	26.2
1909.8	26.6	27.33

5.1.6 ERP Results 850 MHz band FDD5:

Power Control Level	Burst Peak ERP
5	≤38.45dBm (7W)

Frequency (MHz)	Effective Radiated Power (dBm)
826.4	23.01
836.6	23.83
846.6	23.75

5.1.7 EIRP Results 1900 MHz band FDD2:

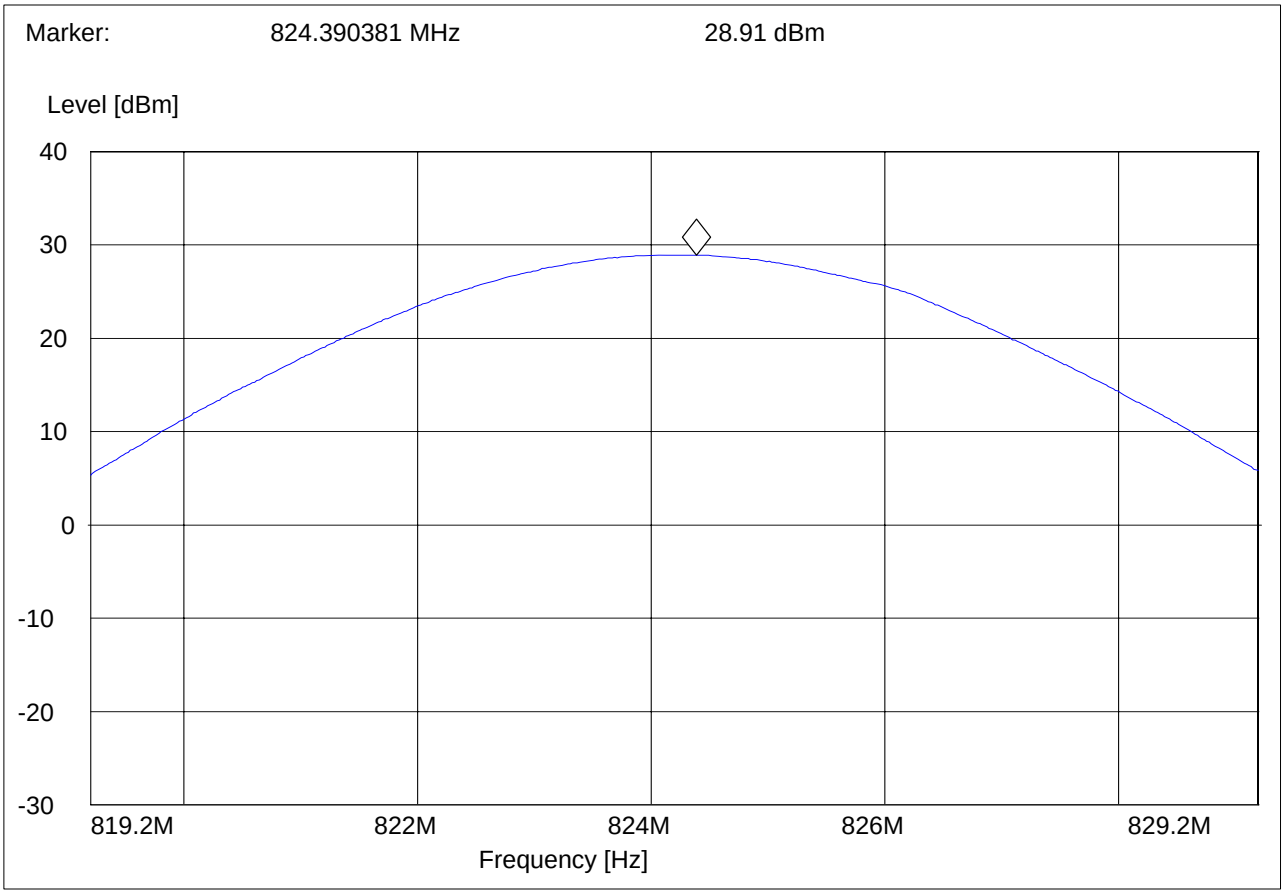
Power Control Level	Burst Peak EIRP
0	≤33dBm (2W)

Frequency (MHz)	Effective Isotropic Radiated Power (dBm)
1852.4	27.83
1880.0	27.11
1907.6	28.17

EIRP (GSM 850) **§22.913(a)**
CHANNEL 128 GPRS

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.128
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "EIRP 850 CH 128 H"

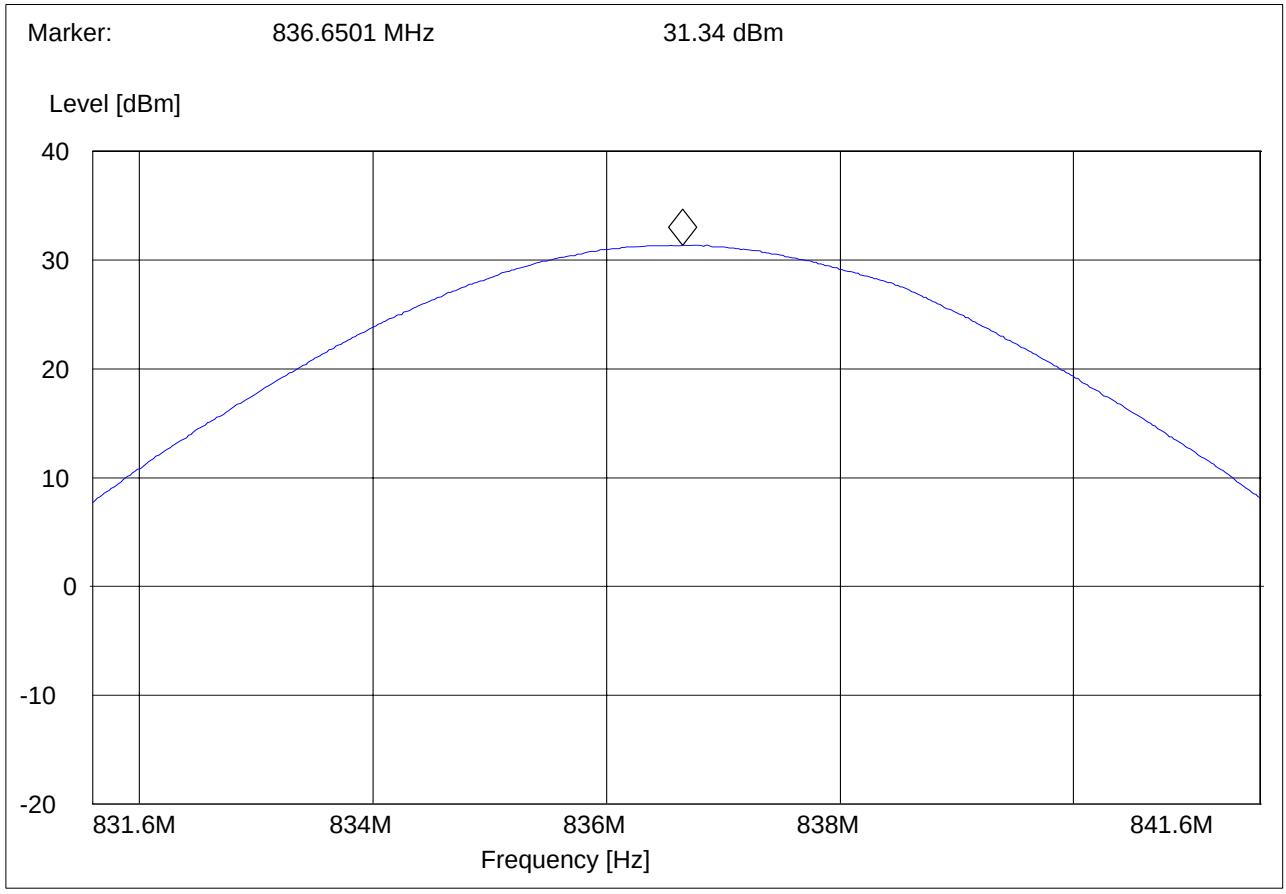
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
819.2 MHz	829.2 MHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM
		MaxPeak			



EIRP (GSM 850) §22.913(a)
CHANNEL 190 GPRS

```
EUT:              OA3541 PCMCIA Network Card
Customer::        Alcatel Lucent
Test Mode:        GSM 850MHz; CH 190
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC Laptop
Comments:
```
SWEEP TABLE: "EIRP 850 CH 190 H"

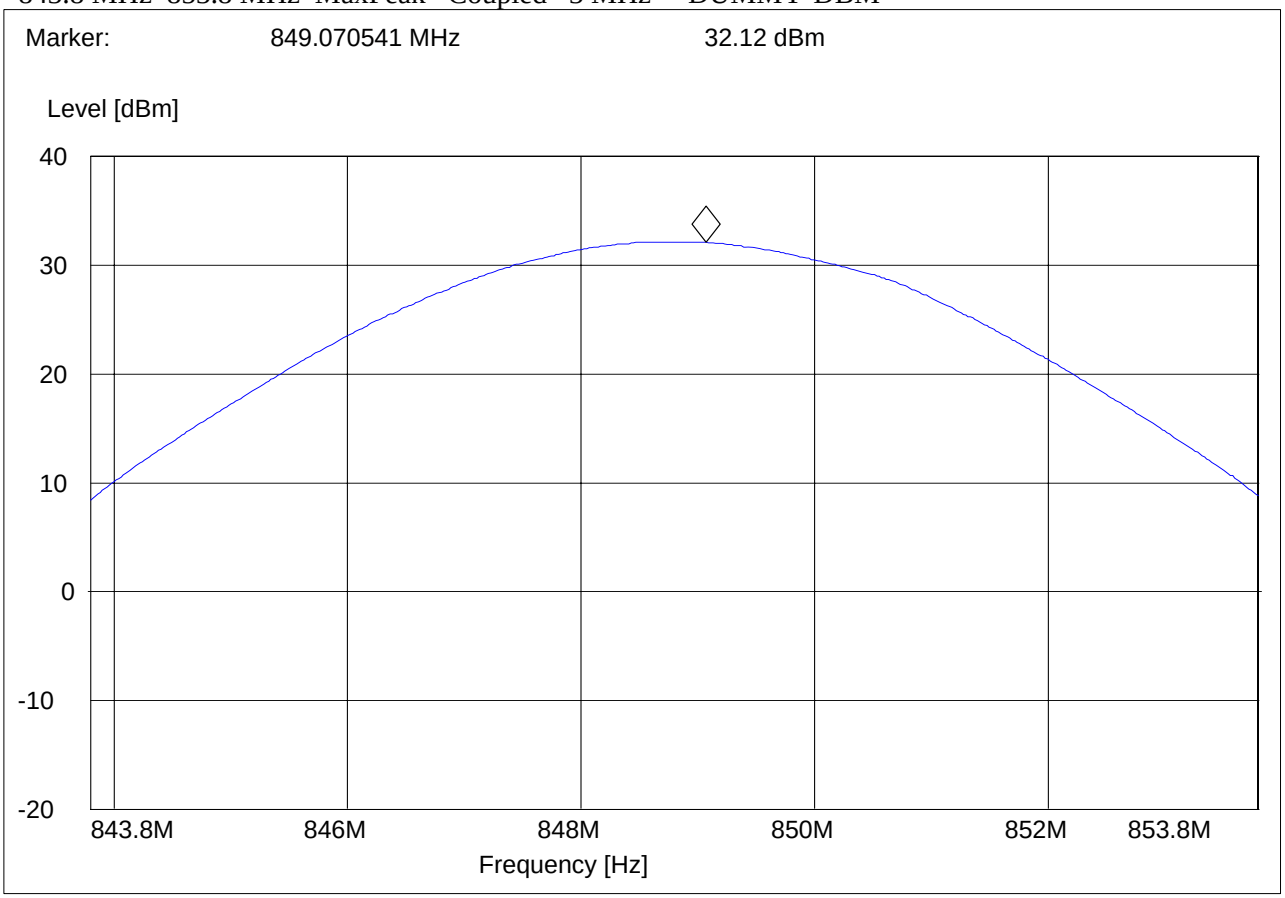
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
831.6 MHz	841.6 MHz	MaxPeak MaxPeak	Coupled	3 MHz	DUMMY-DBM



EIRP (GSM 850) **§22.913(a)**
CHANNEL 251 GPRS

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.251
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "EIRP 850 CH 251 H"

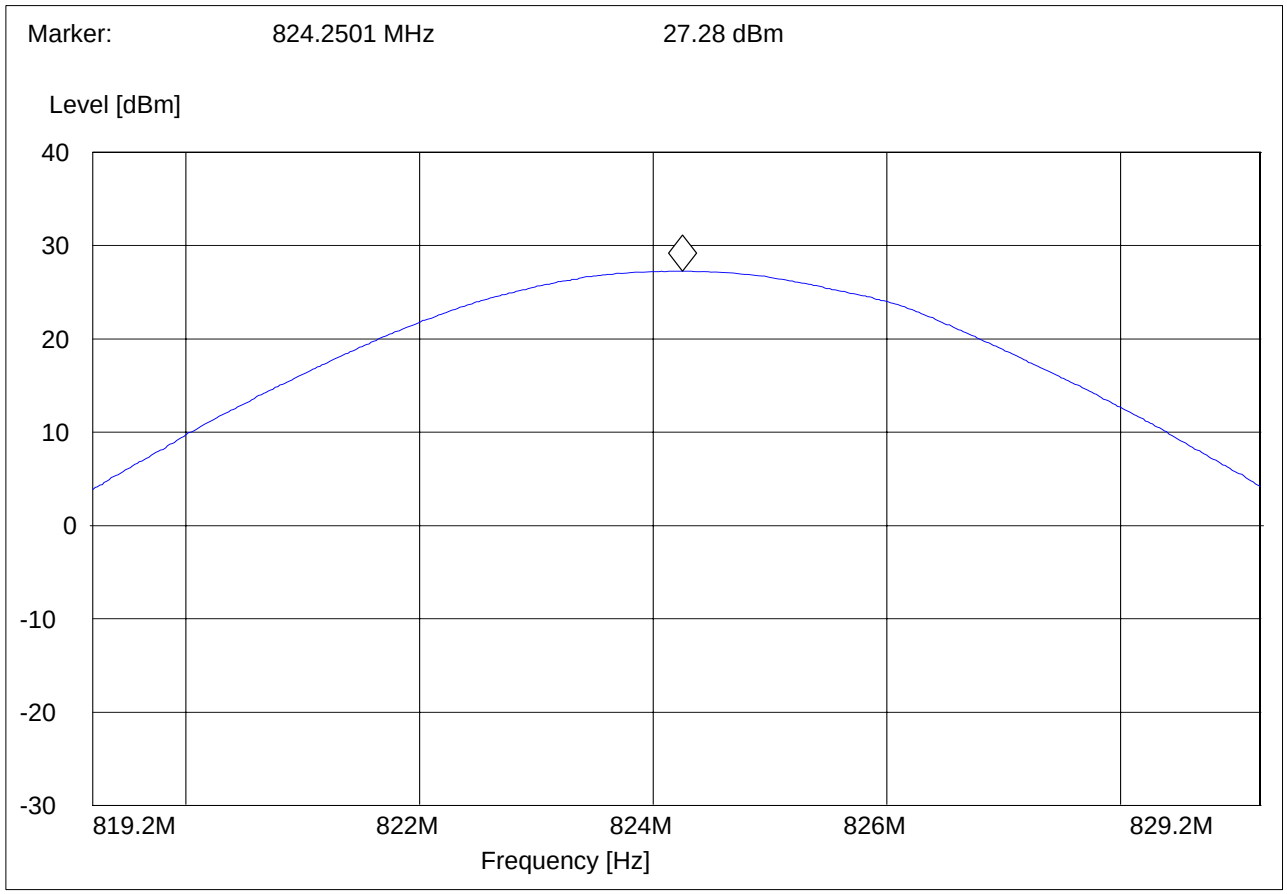
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
843.8 MHz	853.8 MHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM



EIRP (GSM 850) **§22.913(a)**
CHANNEL 128 EGPRS
EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850 EGPRS CH 128
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC and LAPTOP
Comments: TT @ 45°

SWEEP TABLE: "EIRP 850 CH 128 H"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
819.2 MHz	829.2 MHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM MaxPeak

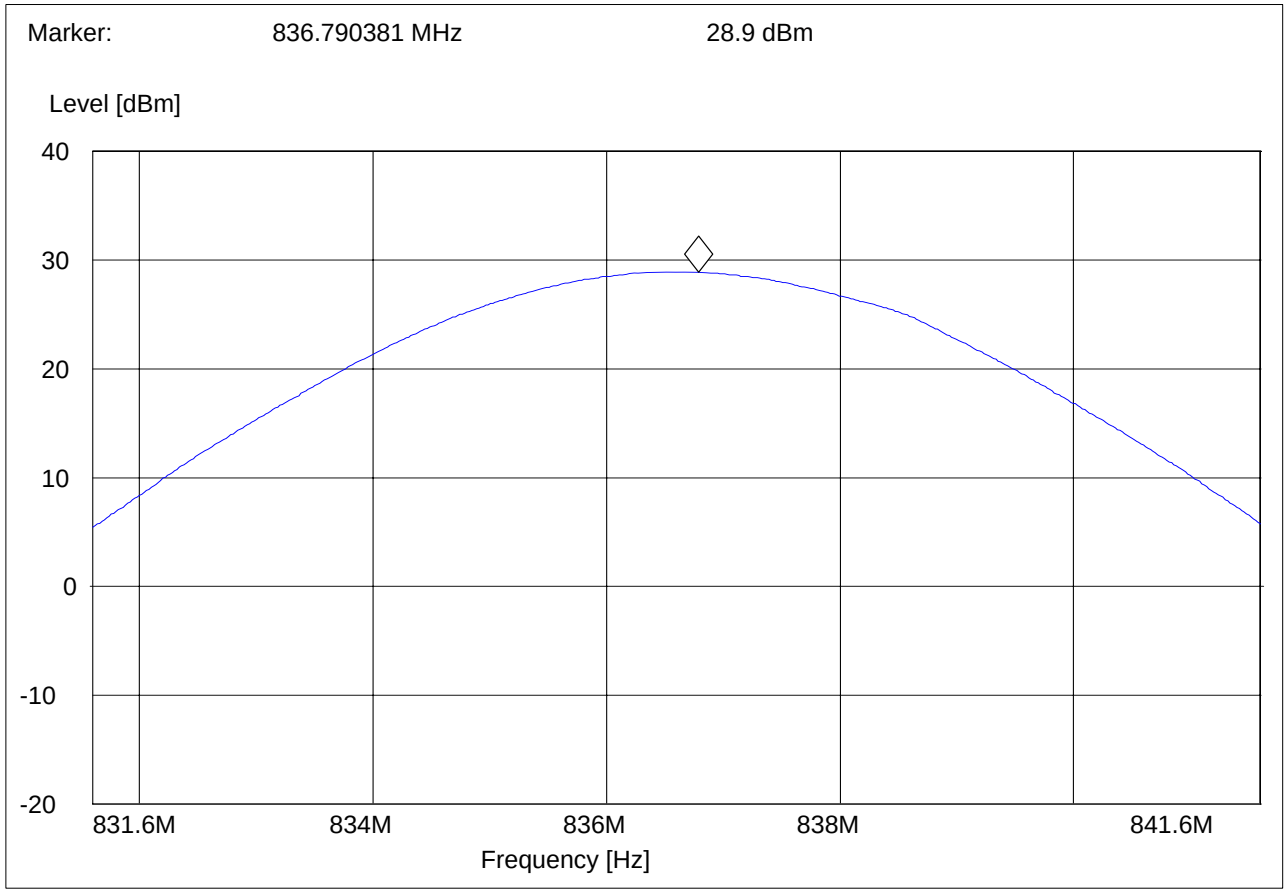


EIRP (GSM 850) §22.913(a)
CHANNEL 190 EGPRS

```
EUT:              OA3541 PCMCIA Network Card
Customer::        Alcatel Lucent
Test Mode:        GSM 850 EGPRS CH 190
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC and LAPTOP
Comments:         TT @ 45°
```

SWEEP TABLE: "EIRP 850 CH 190 H"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
831.6 MHz	841.6 MHz	MaxPeak MaxPeak	Coupled	3 MHz	DUMMY-DBM

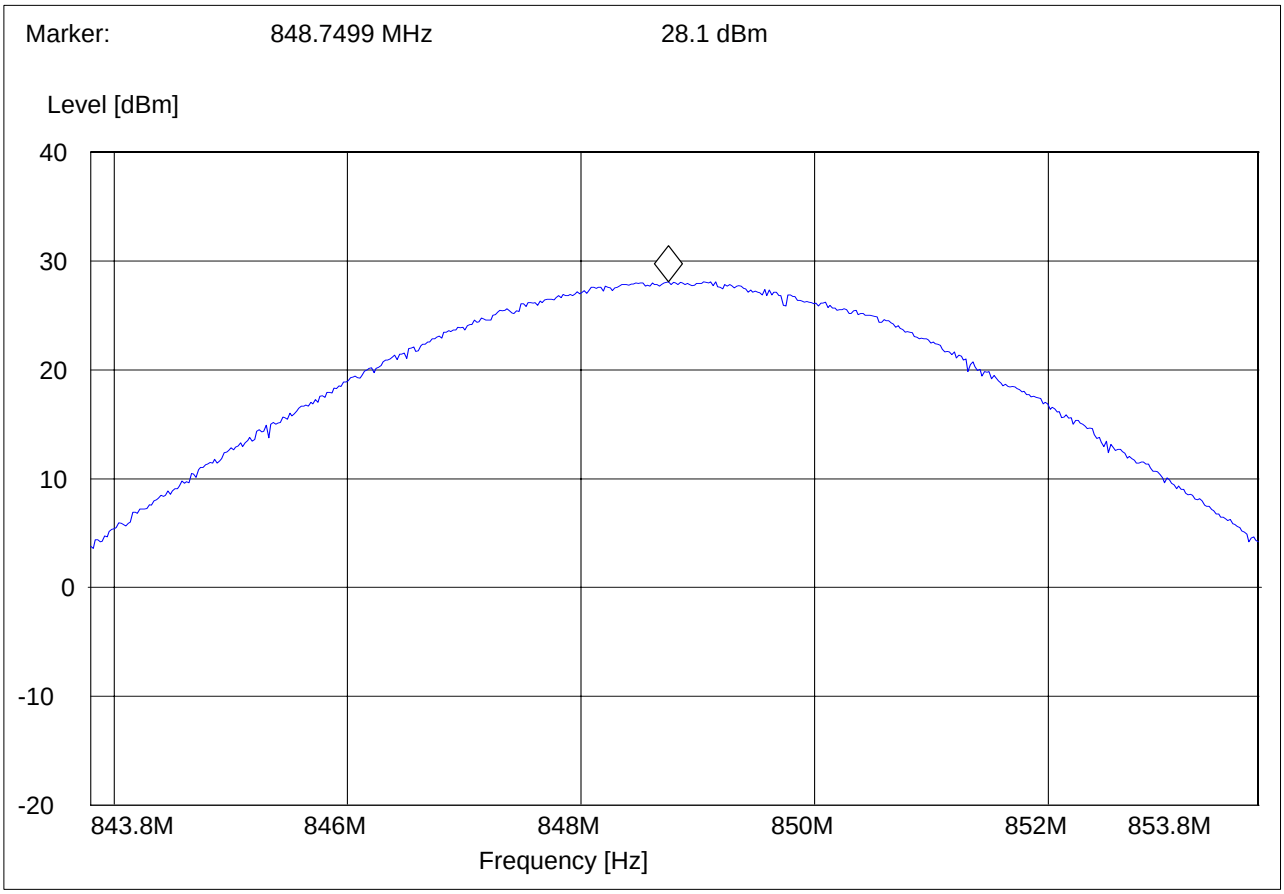


EIRP (GSM 850) **§22.913(a)**
CHANNEL 251 EGPRS

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850 EGPRS CH 190
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC and LAPTOP

SWEEP TABLE: "EIRP 850 CH 190 H"

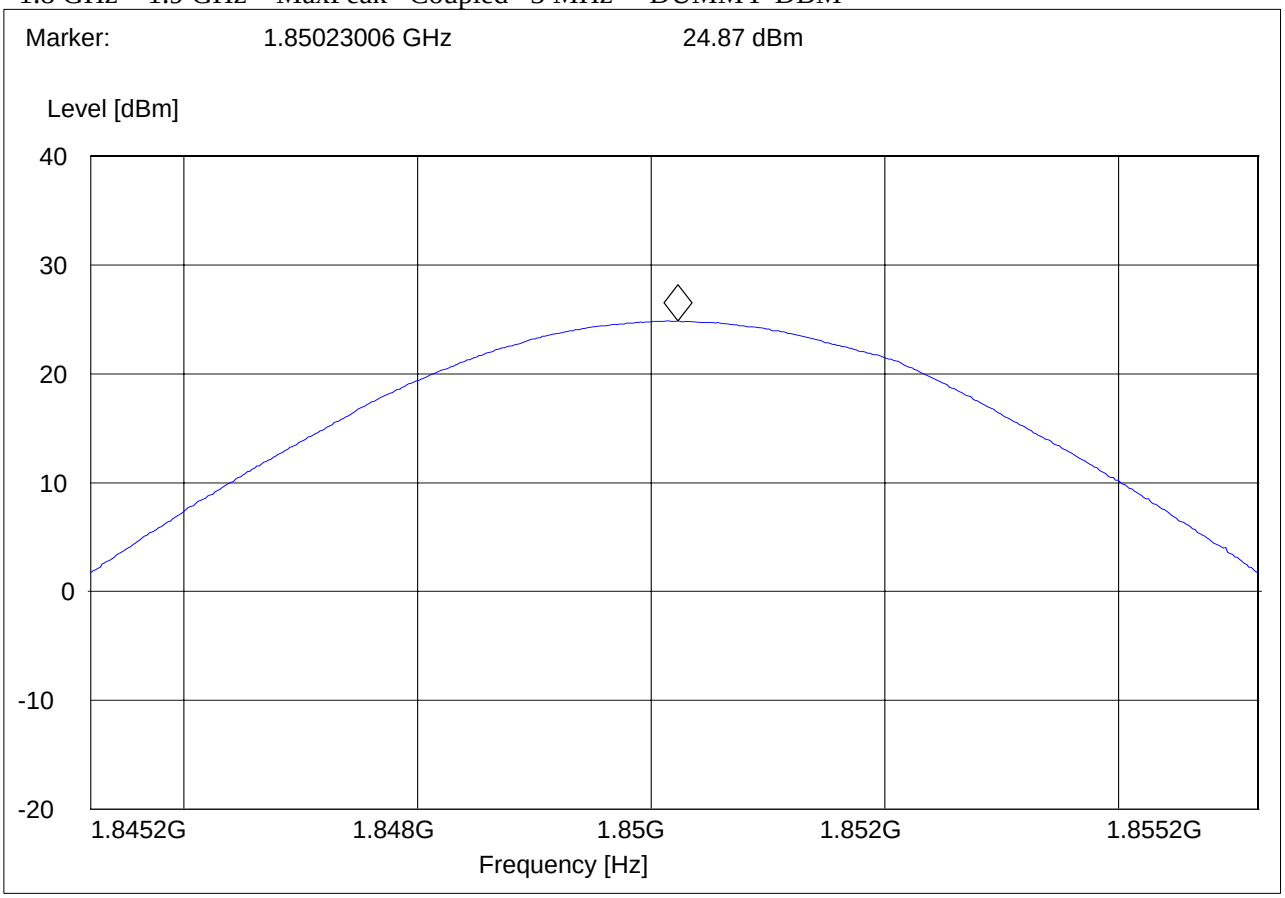
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
831.6 MHz	841.6 MHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM
		MaxPeak			



EIRP (PCS-1900) **§24.232(b)**
CHANNEL 512 GPRS

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 512
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "EIRP 1900 CH512"

Short Description:	EIRP PCS 1900 for channel-512			
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.8 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM

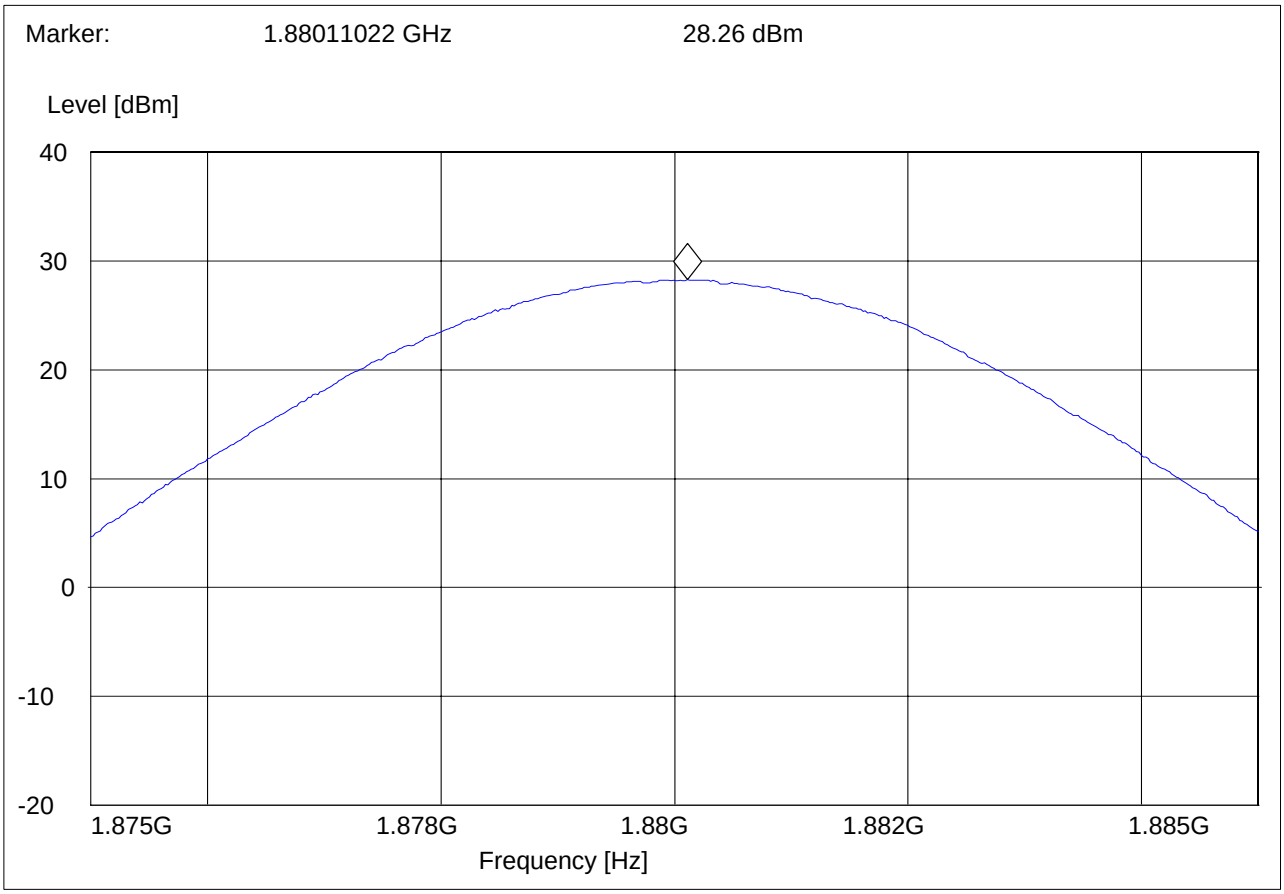


EIRP (PCS-1900) **§24.232(b)**
CHANNEL 661 GPRS

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 661
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "EIRP 1900 CH661"

Short Description: EIRP PCS 1900 for channel-661

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM MaxPeak

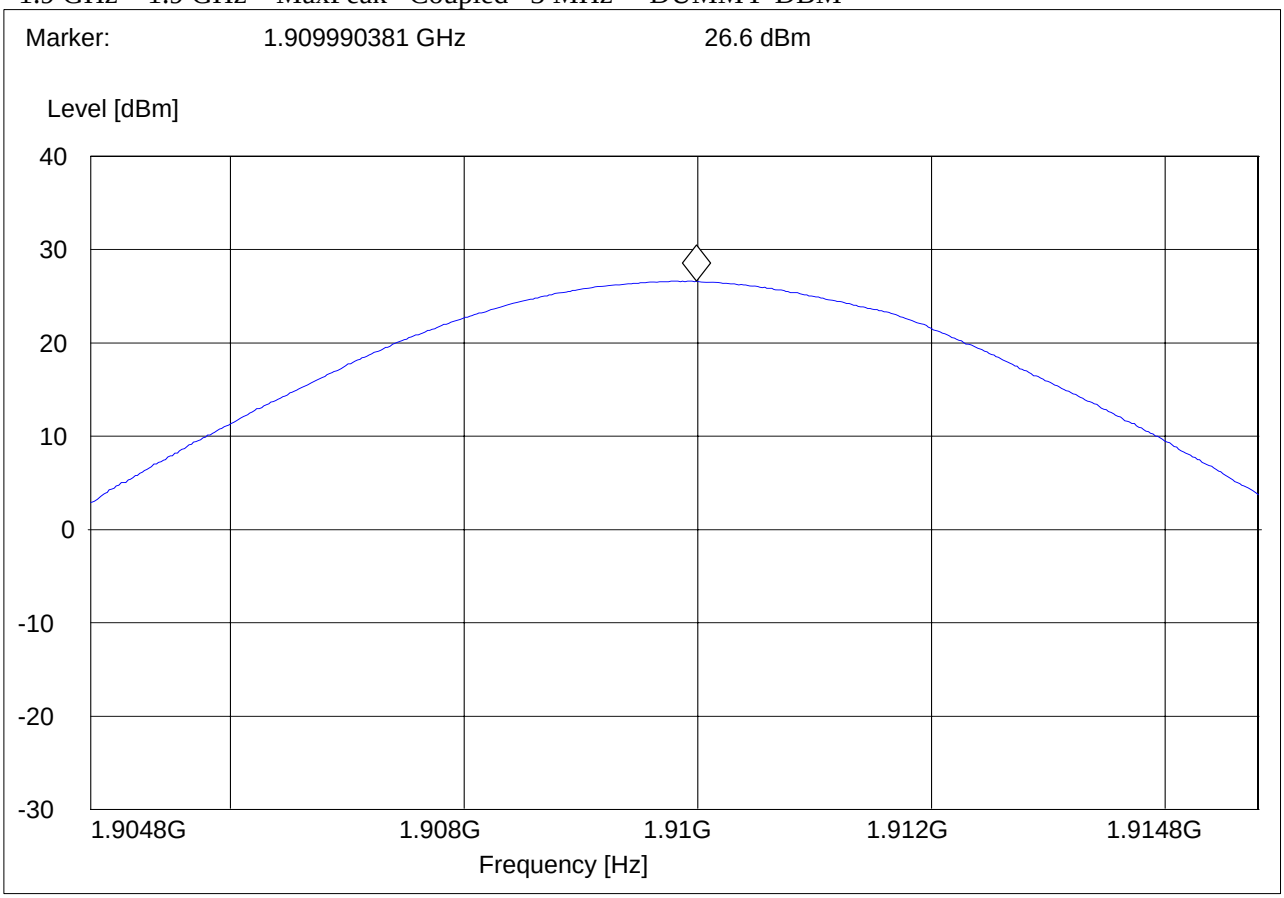


EIRP (PCS-1900) **§24.232(b)**
CHANNEL 810 GPRS

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 810
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "EIRP 1900 CH810"

Short Description: EIRP PCS 1900 for channel-810

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM

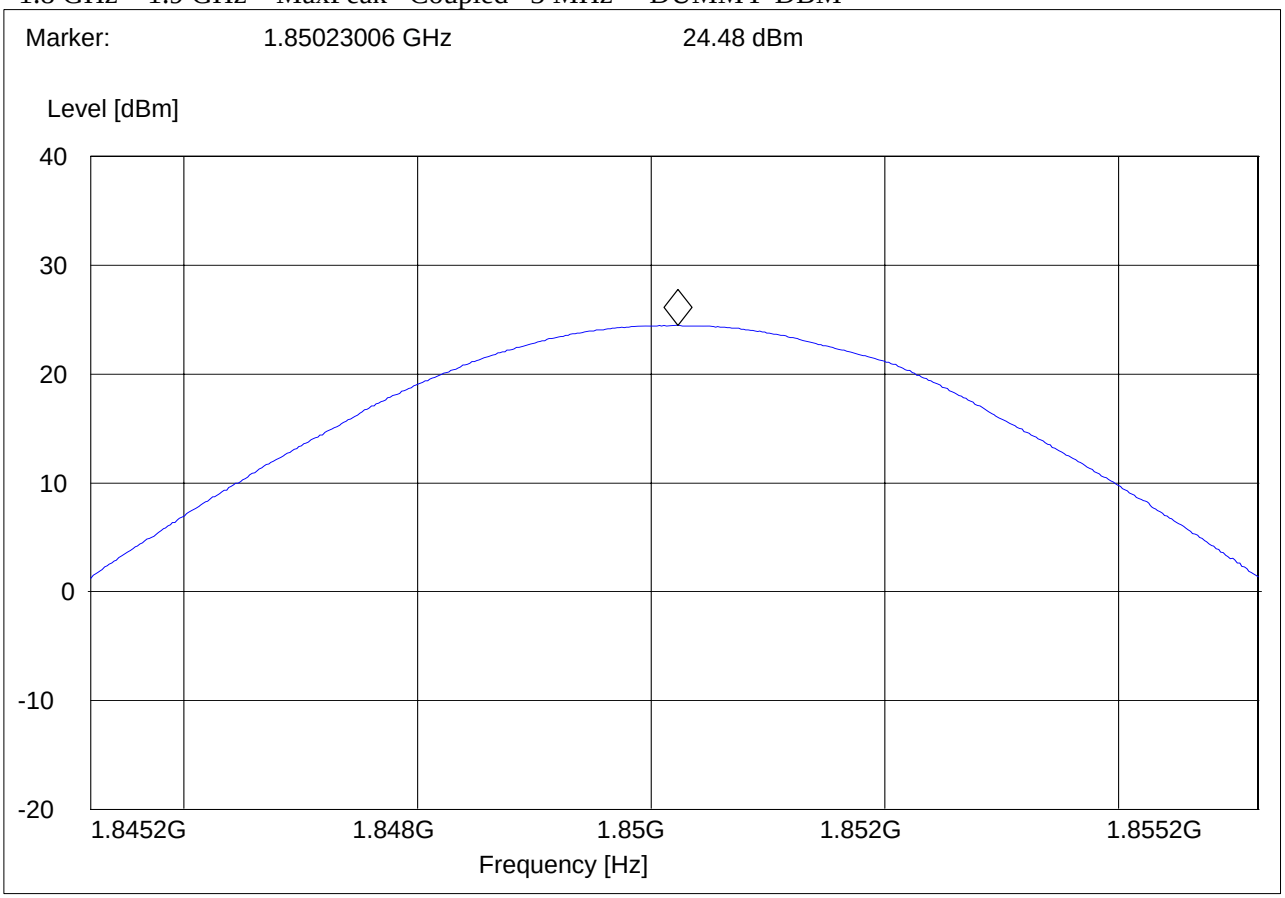


EIRP (PCS-1900) **§24.232(b)**
CHANNEL 512 EGPRS

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900 EGPRS CH 512
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC and LAPTOP
Comments: TT @ 161°
SWEEP TABLE: "EIRP 1900 CH512"

Short Description: EIRP PCS 1900 for channel-512

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.8 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM

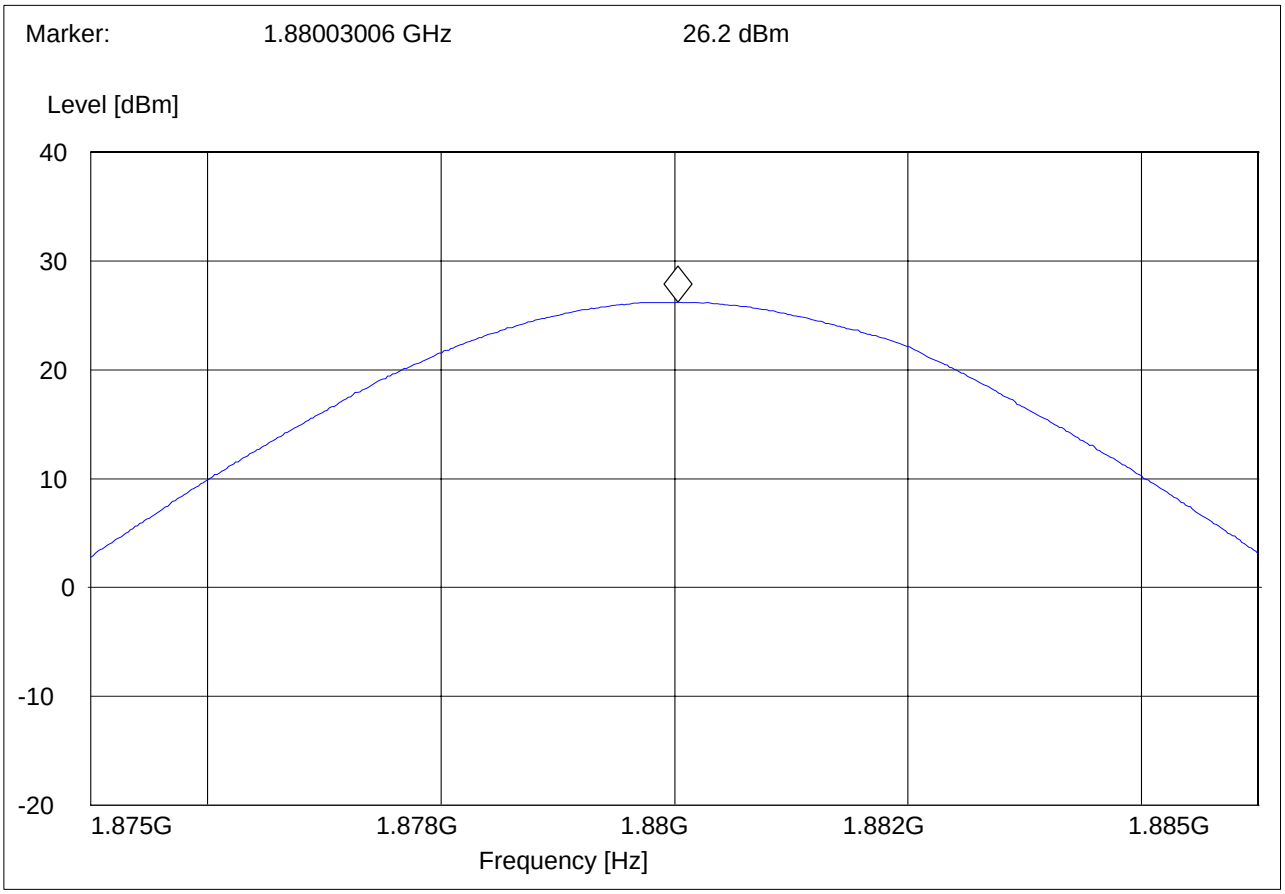


EIRP (PCS-1900) **§24.232(b)**
CHANNEL 661 EGPRS
EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900 EGPRS CH 661
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC and LAPTOP
Comments: TT @ 161°

SWEEP TABLE: "EIRP 1900 CH661"

Short Description: EIRP PCS 1900 for channel-661

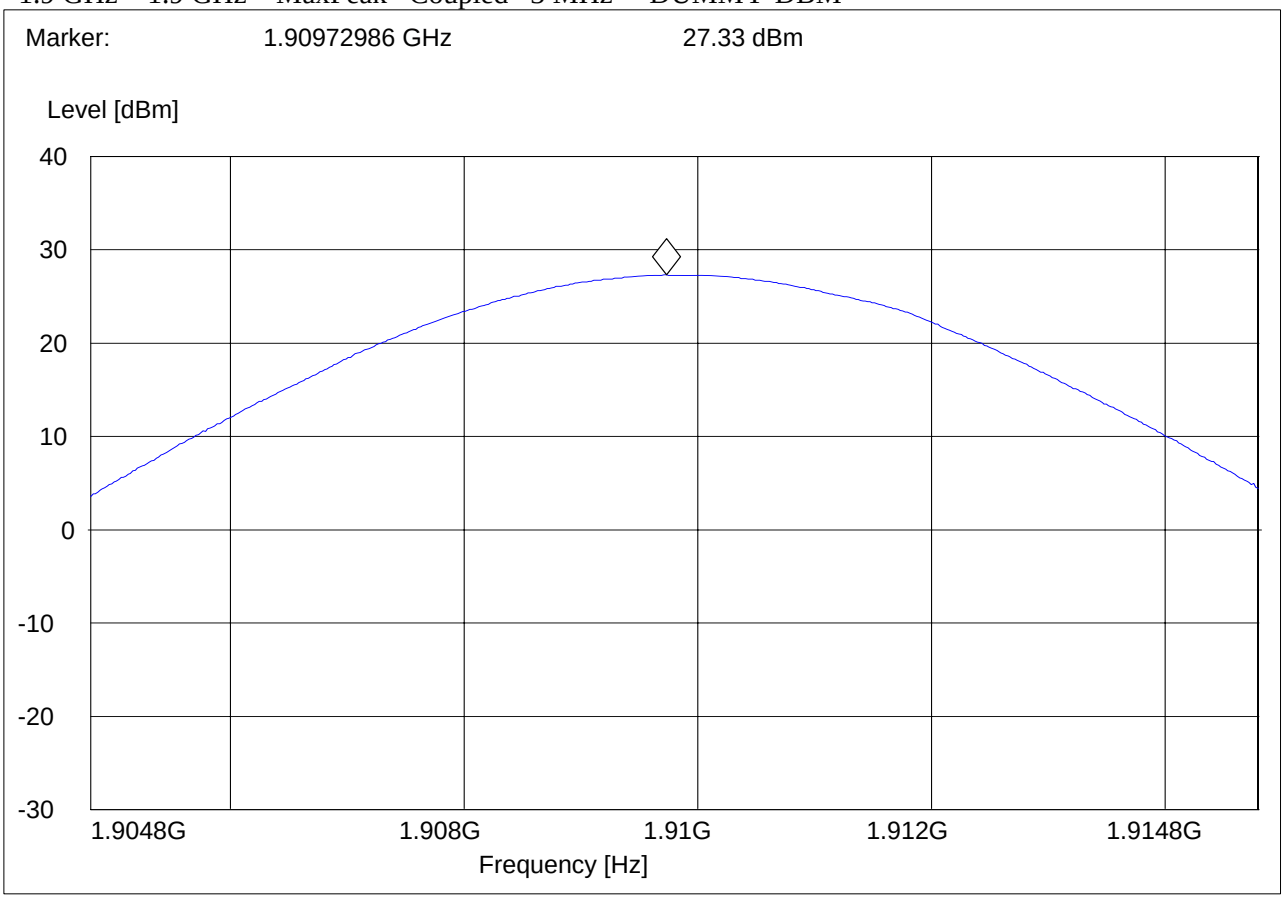
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM MaxPeak



EIRP (PCS-1900) **§24.232(b)**
CHANNEL 810 EGPRS
EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900 EGPRS CH 810
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC and LAPTOP
Comments: TT @ 161°
SWEEP TABLE: "EIRP 1900 CH810"

Short Description: EIRP PCS 1900 for channel-810

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM

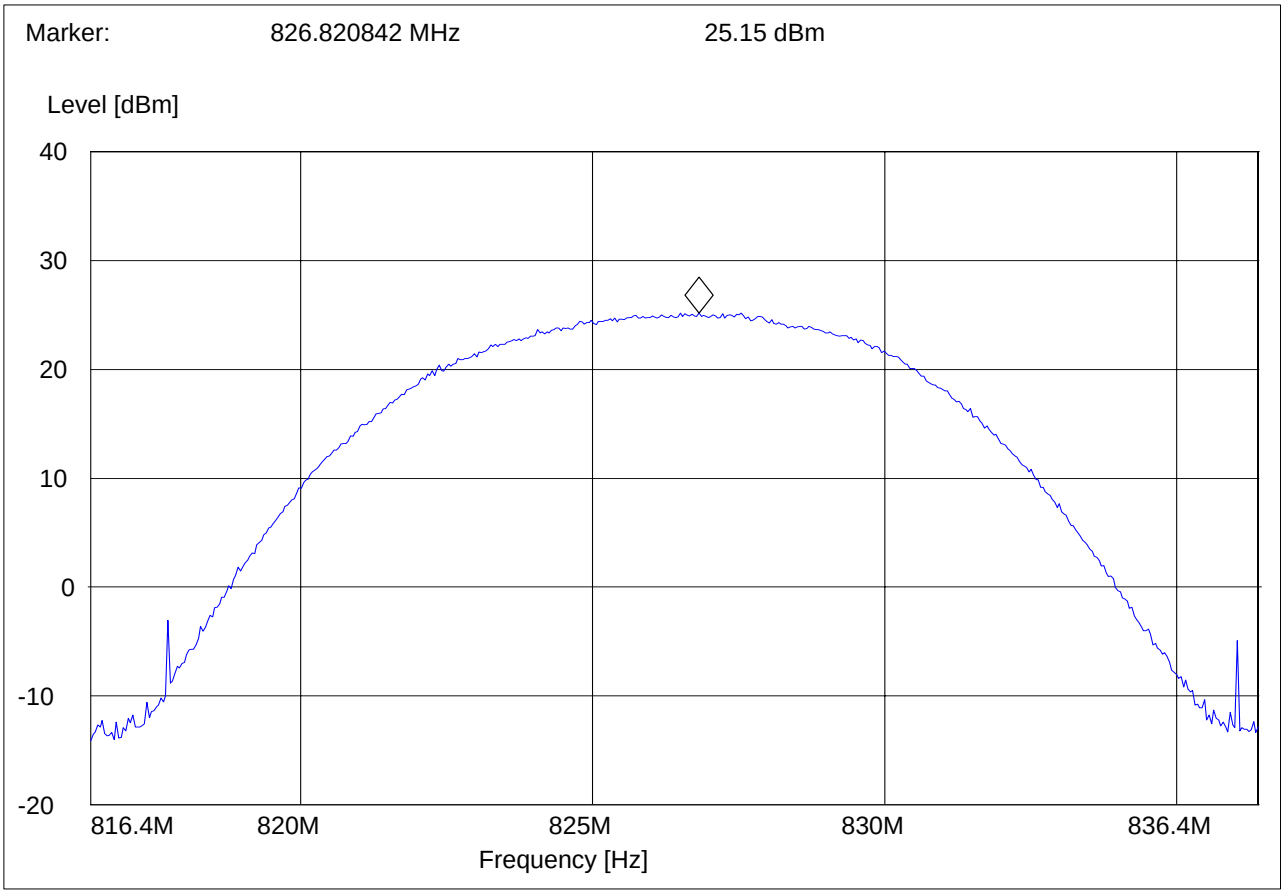


EIRP (GSM 850) **§22.913(a)**
CHANNEL 4132 FDD5

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4132
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "EIRP 850 CH 4132H"

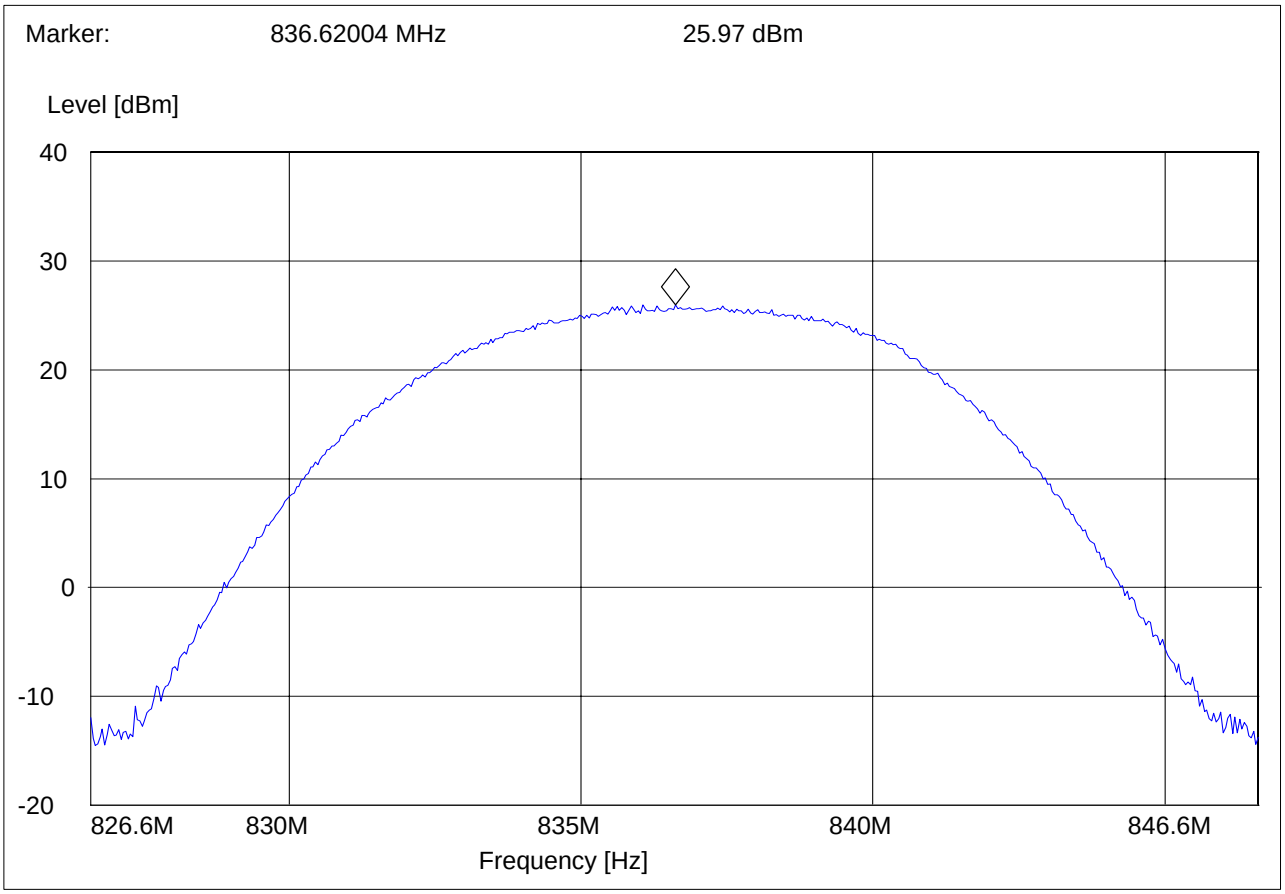
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
816.4 MHz	836.4 MHz	MaxPeak	Coupled	5 MHz	DUMMY-DBM
		MaxPeak			



EIRP (GSM 850) **§22.913(a)**
CHANNEL 4183 FDD5

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4183
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "EIRP 850 CH 4183 H"

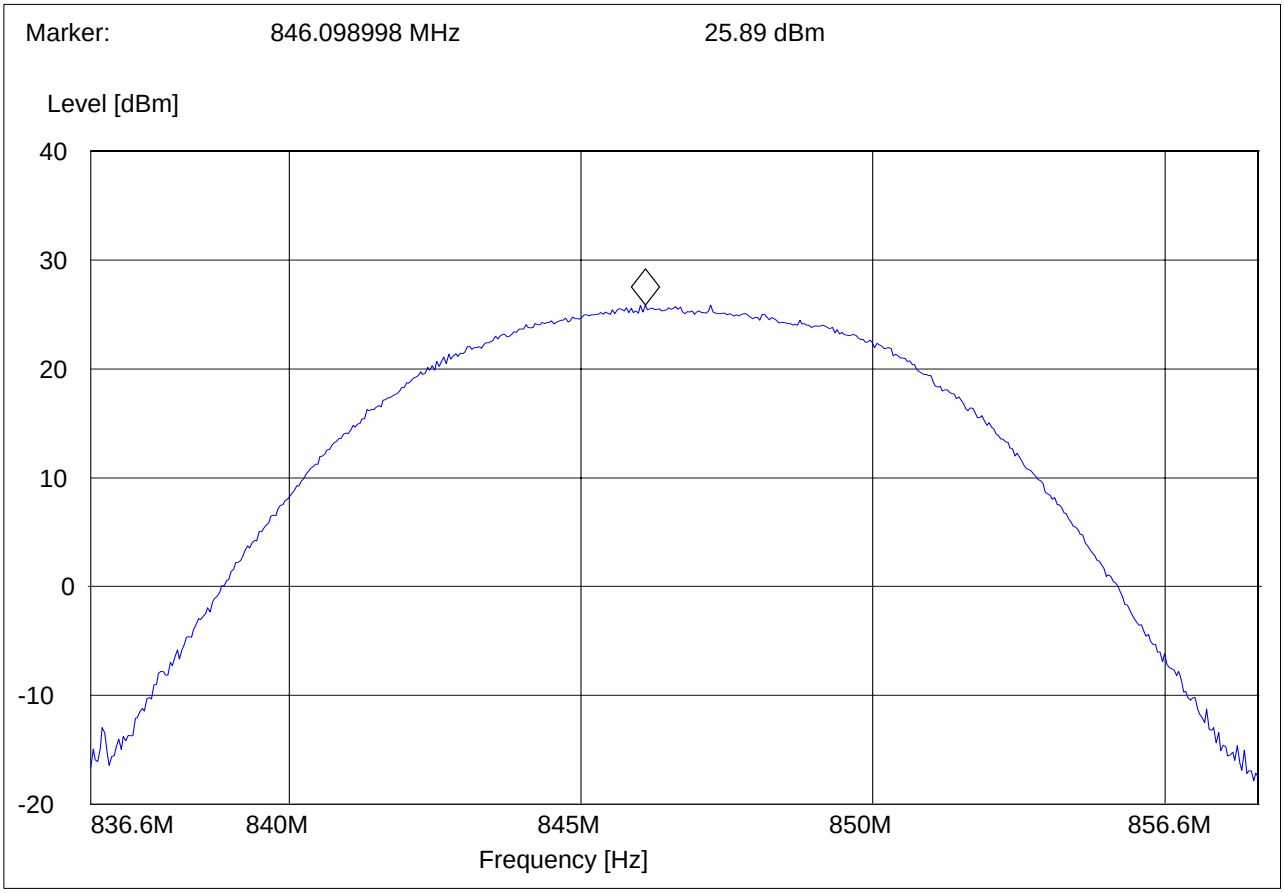
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
826.6 MHz	846.6 MHz	MaxPeak	Coupled	5 MHz	DUMMY-DBM
		MaxPeak			



EIRP (GSM 850) **§22.913(a)**
CHANNEL 4233 FDD5

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4233
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "EIRP 850 CH 4233H"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
836.6 MHz	856.6 MHz	MaxPeak	Coupled	5 MHz	DUMMY-DBM
		MaxPeak			



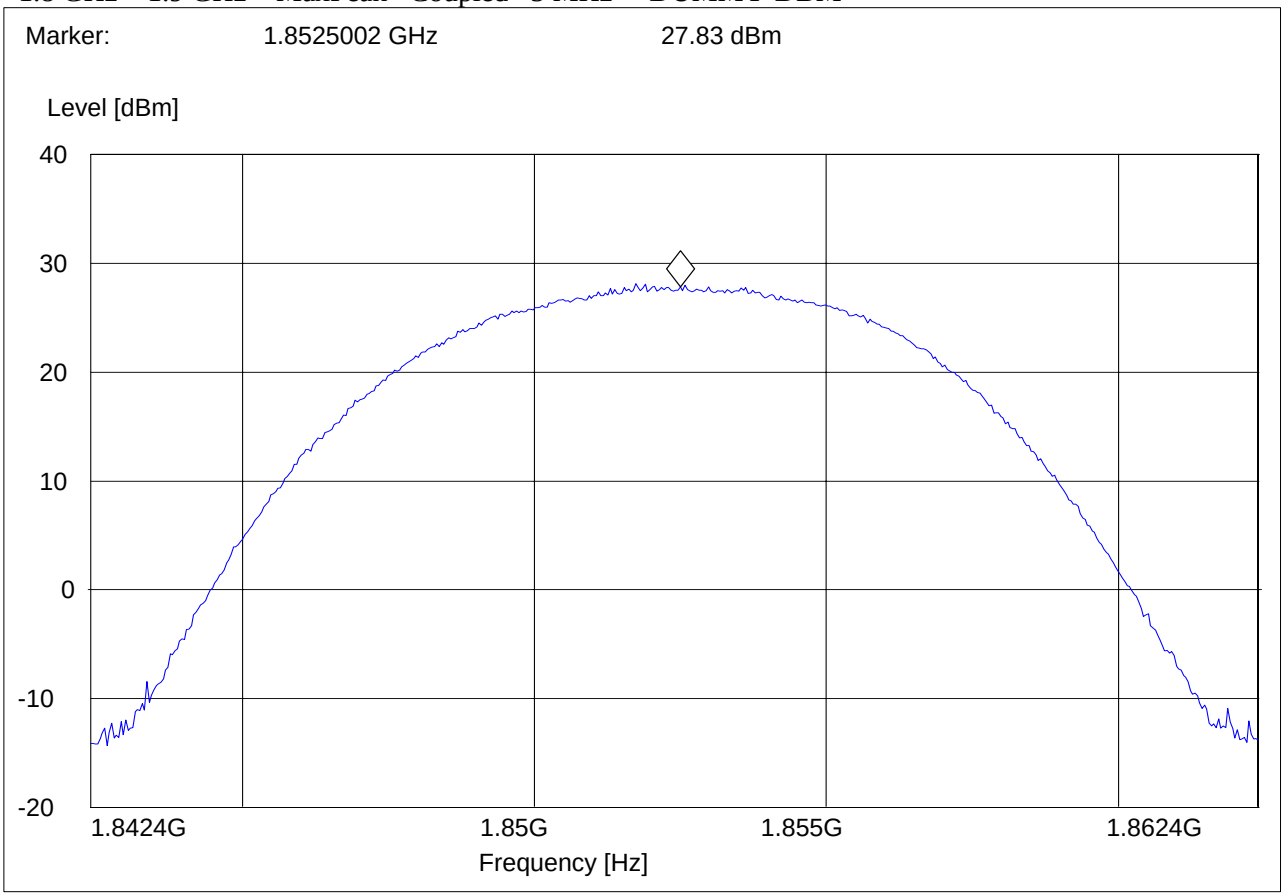
EIRP (PCS-1900) **§24.232(b)**
CHANNEL 9262 FDD2

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9262
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "EIRP 1900 CH 9262"

Short Description: EIRP PCS 1900 for channel-512

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.8 GHz	1.9 GHz	MaxPeak	Coupled	5 MHz	DUMMY-DBM



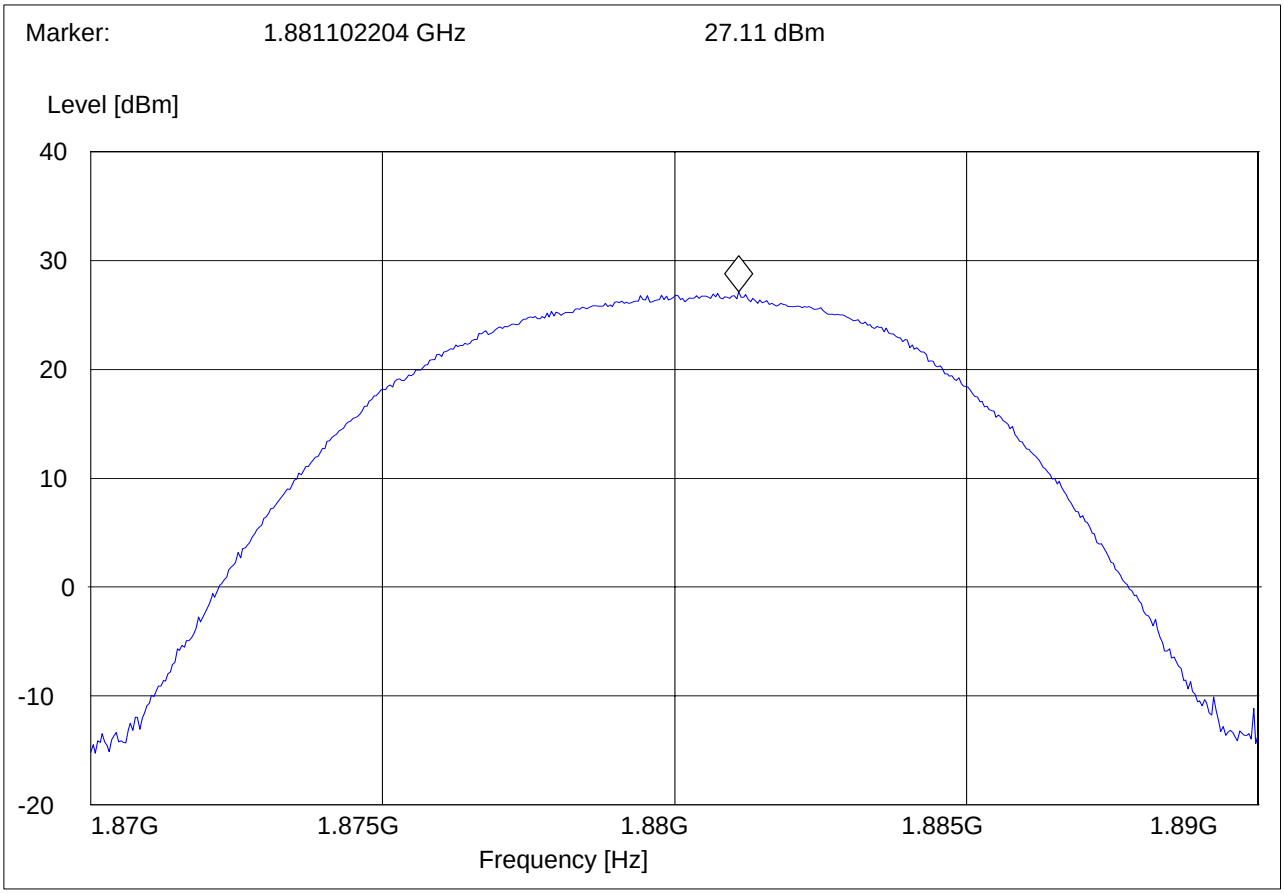
EIRP (PCS-1900) **§24.232(b)**
CHANNEL 9400 FDD2

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9400
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "EIRP 1900 CH 9400"

Short Description: EIRP PCS 1900 for channel-661

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	5 MHz	DUMMY-DBM MaxPeak

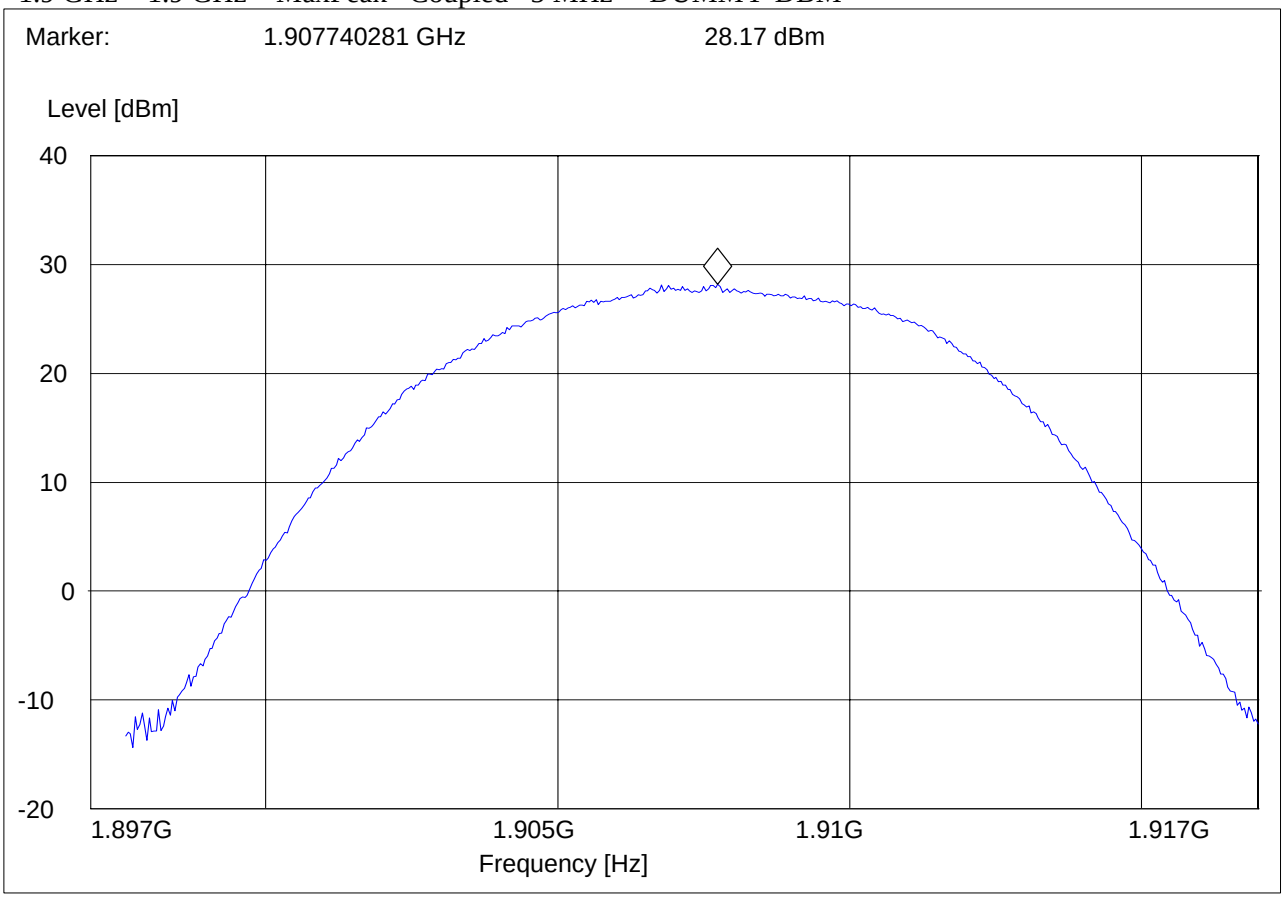


EIRP (PCS-1900) **§24.232(b)**
CHANNEL 9538 FDD2

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9538
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "EIRP 1900 CH 9538"

Short Description: EIRP PCS 1900 for channel-810

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	5 MHz	DUMMY-DBM



5.2 Spurious Emissions Radiated

5.2.1 FCC 2.1053 Measurements required: Field strength of spurious radiation.

(a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission.

5.2.2 Limits:

5.2.2.1 FCC 22.917 Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) *Out of band emissions*. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.2.2.2 FCC 24.238 Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

(a) *Out of band emissions*. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

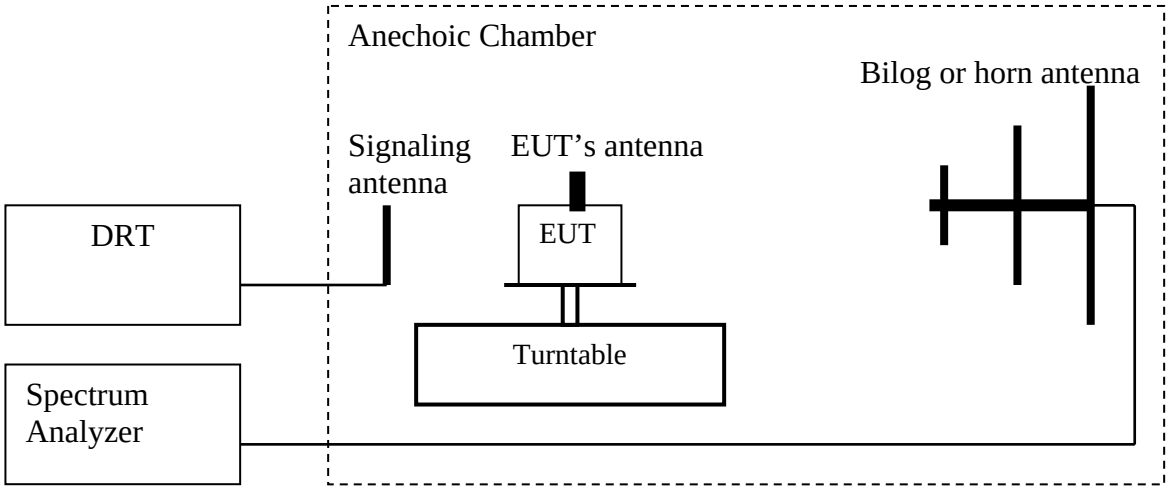
(b) Measurement procedure. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required

measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.2.3 Radiated out of band measurement procedure:

Based on TIA-603C 2004

2.2.12 Unwanted emissions: Radiated Spurious



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (**LVL**) up to the tenth harmonic of the carrier frequency.
5. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the level of spurious emissions using the following equation:
   Spurious (dBm) = **LVL** (dBm) + **LOSS** (dB):
8. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
9. Determine the level of spurious emissions using the following equation:
   Spurious (dBm) = **LVL** (dBm) + **LOSS** (dB):
10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

(**note:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

Spectrum analyzer settings:
Res B/W: 1 MHz
Vid B/W: 1 MHz

Measurement Survey:

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the GSM-850 & PCS-1900 bands. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the GSM-850 & PCS-1900 band into any of the other blocks respectively. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

5.2.4 Radiated out of band emissions results on EUT:

5.2.4.1 RESULTS OF RADIATED TESTS GSM-850:

Harmonics	Tx ch-128 Freq. (MHz)	Level (dBm)	Tx ch-190 Freq. (MHz)	Level (dBm)	Tx ch-251 Freq. (MHz)	Level (dBm)
2	**1648.4**	NF	**1673.2**	NF	**1697.6**	NF
3	**2472.6**	NF	**2509.8**	NF	**2546.4**	NF
4	**3296.8**	NF	**3346.4**	NF	**3395.2**	NF
5	**4121**	NF	**4183**	NF	**4244**	NF
6	**4945.2**	NF	**5019.6**	NF	**5092.8**	NF
7	**5769.4**	NF	**5856.2**	NF	**5941.6**	NF
8	**6593.6**	NF	**6692.8**	NF	**6790.4**	NF
9	**7417.8**	NF	**7529.4**	NF	**7639.2**	NF
10	**8242**	NF	**8366**	NF	**8488**	NF
NF = NOISE FLOOR						

NOTE:

The EIRP values measured in GMSK modulation are higher than 8PSK modulation so radiated spurious emissions are measured only at GMSK modulation.

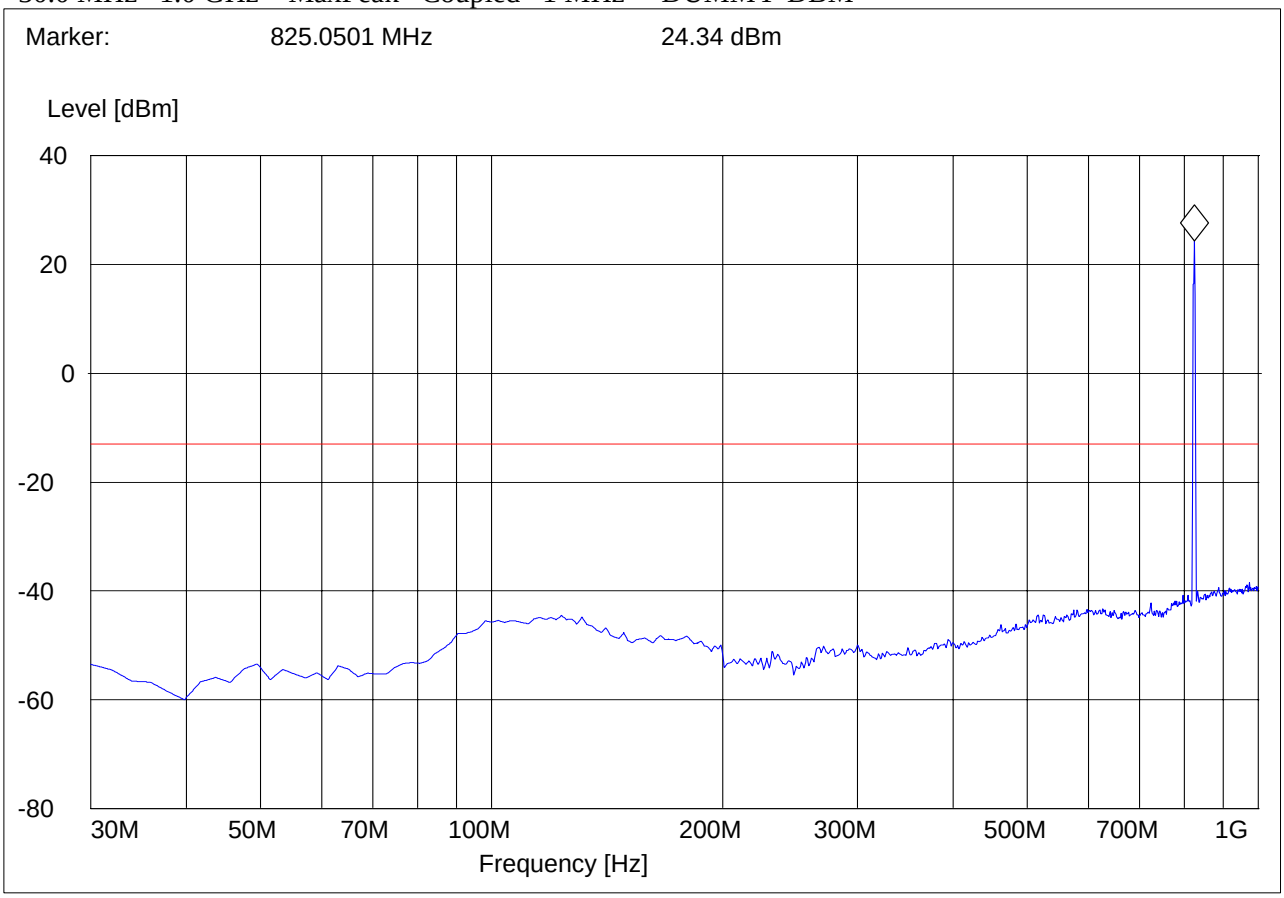
5.2.4.2 RADIATED SPURIOUS EMISSIONS (GSM-850)

TX: 30MHz - 1GHz Spurious emission limit –13dBm
Antenna: vertical
Note: 1.The peak above the limit line is the carrier freq.
2.This plot is valid for low, mid & high channels (worst-case plot)

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.128
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop

SWEEP TABLE: "FCC 24 Spur 30M-1G_V"

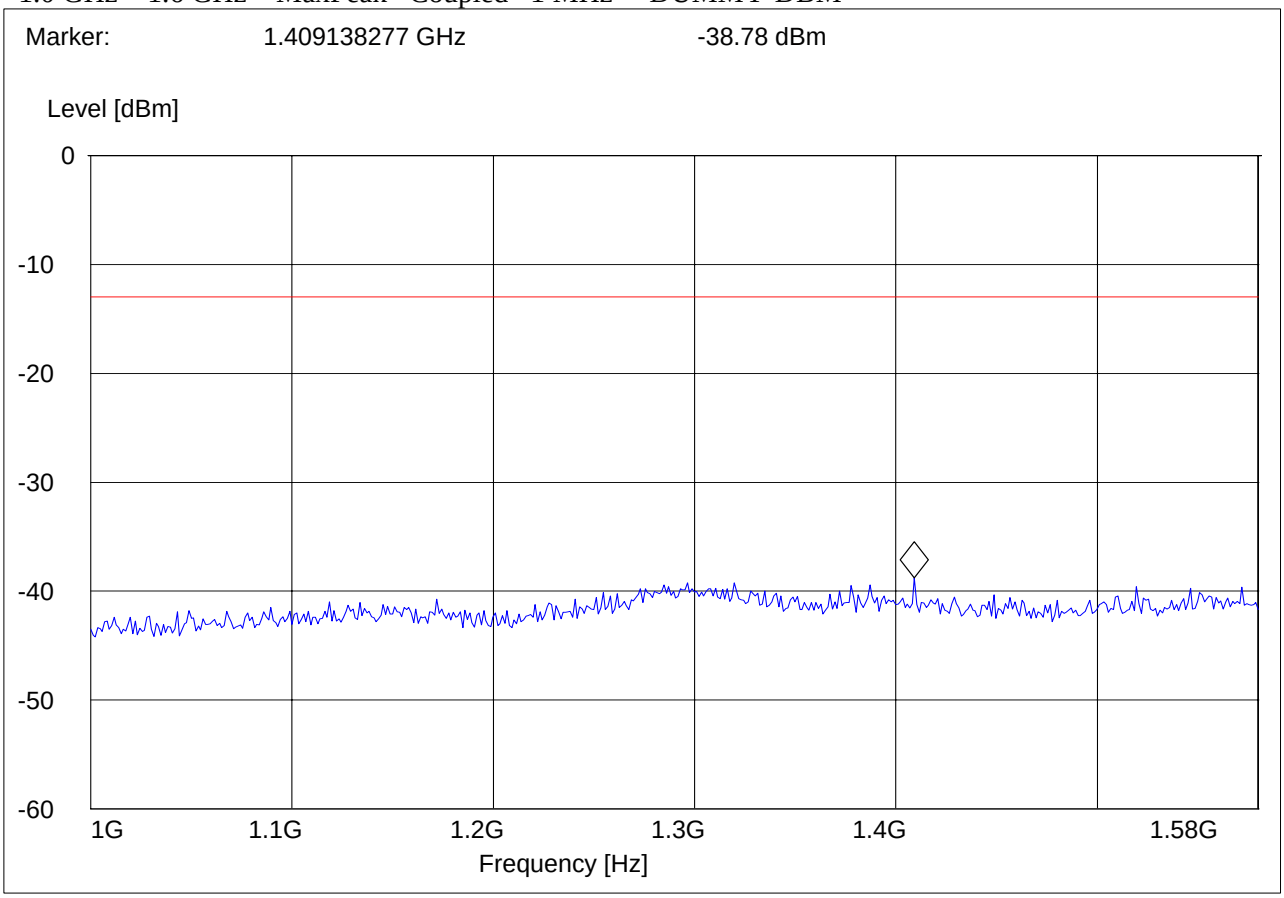
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 824.2MHz: 1GHz – 1.58GHz
EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.128
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop

SWEEP TABLE: "FCC 22Spuri 1-1.58G"

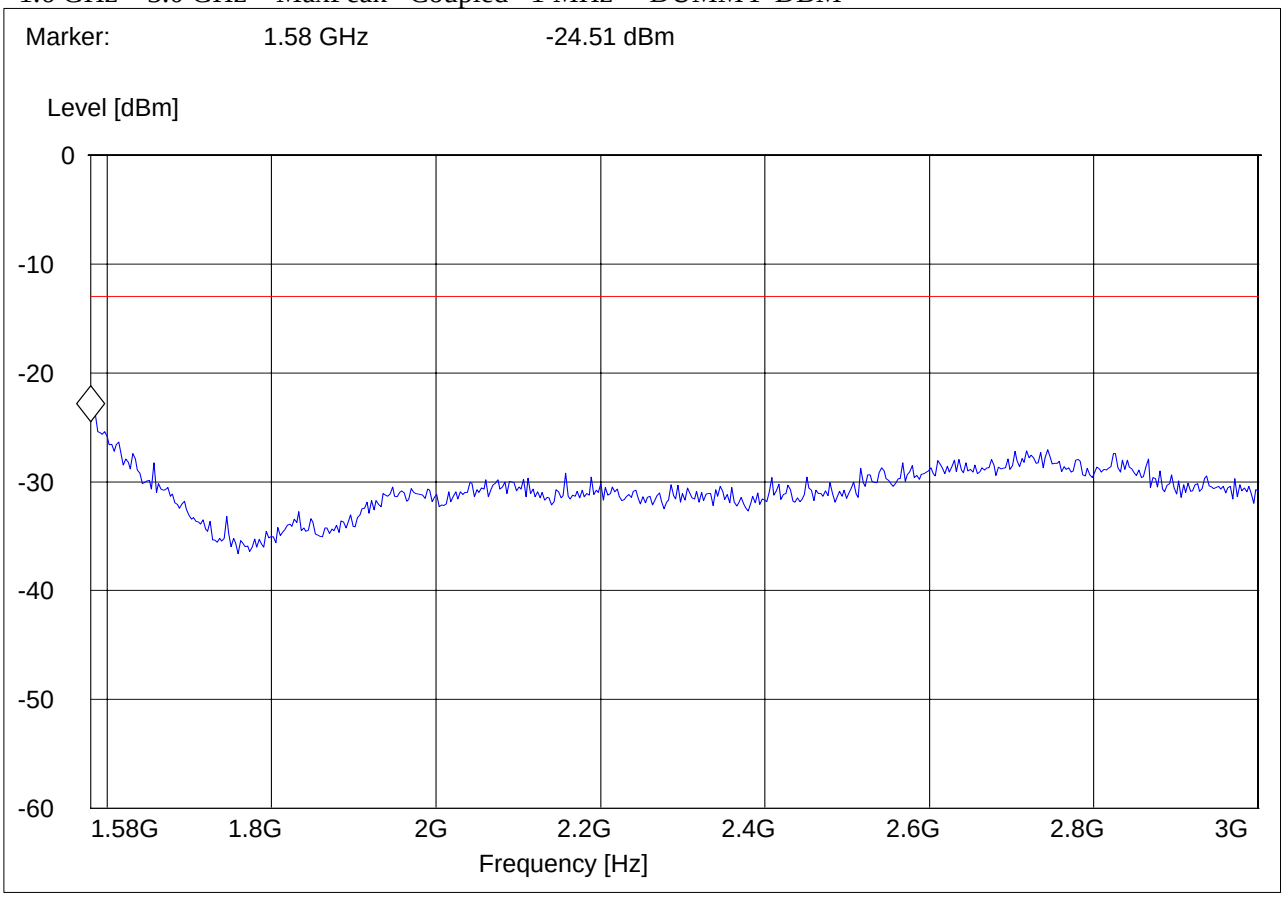
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 824.2MHz: 1.58GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.128
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "FCC 22Spuri 1.58-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

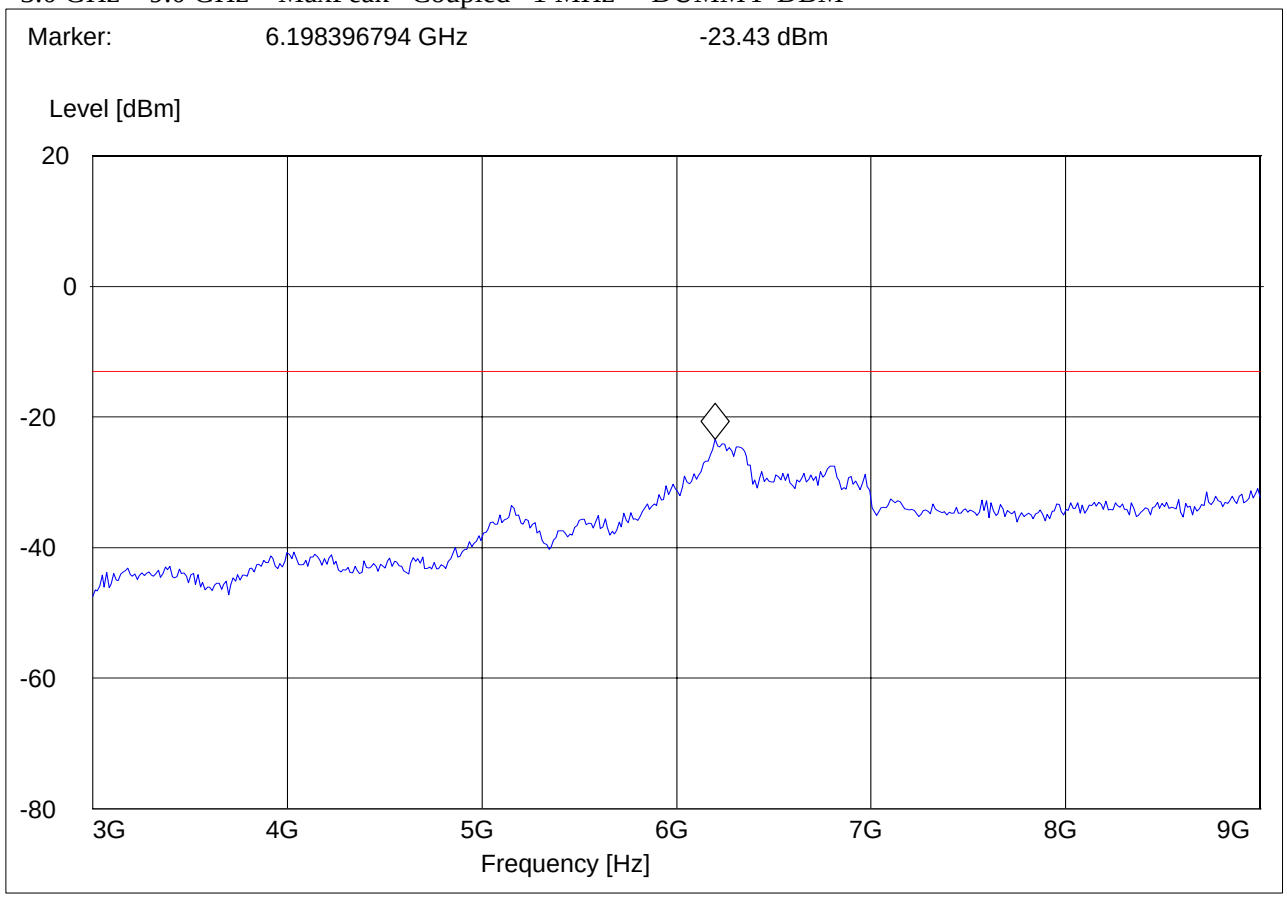


RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 824.2MHz: 3GHz – 9GHz
EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.128
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 3-9G"

Short Description: FCC 24 1GHz-8GHz

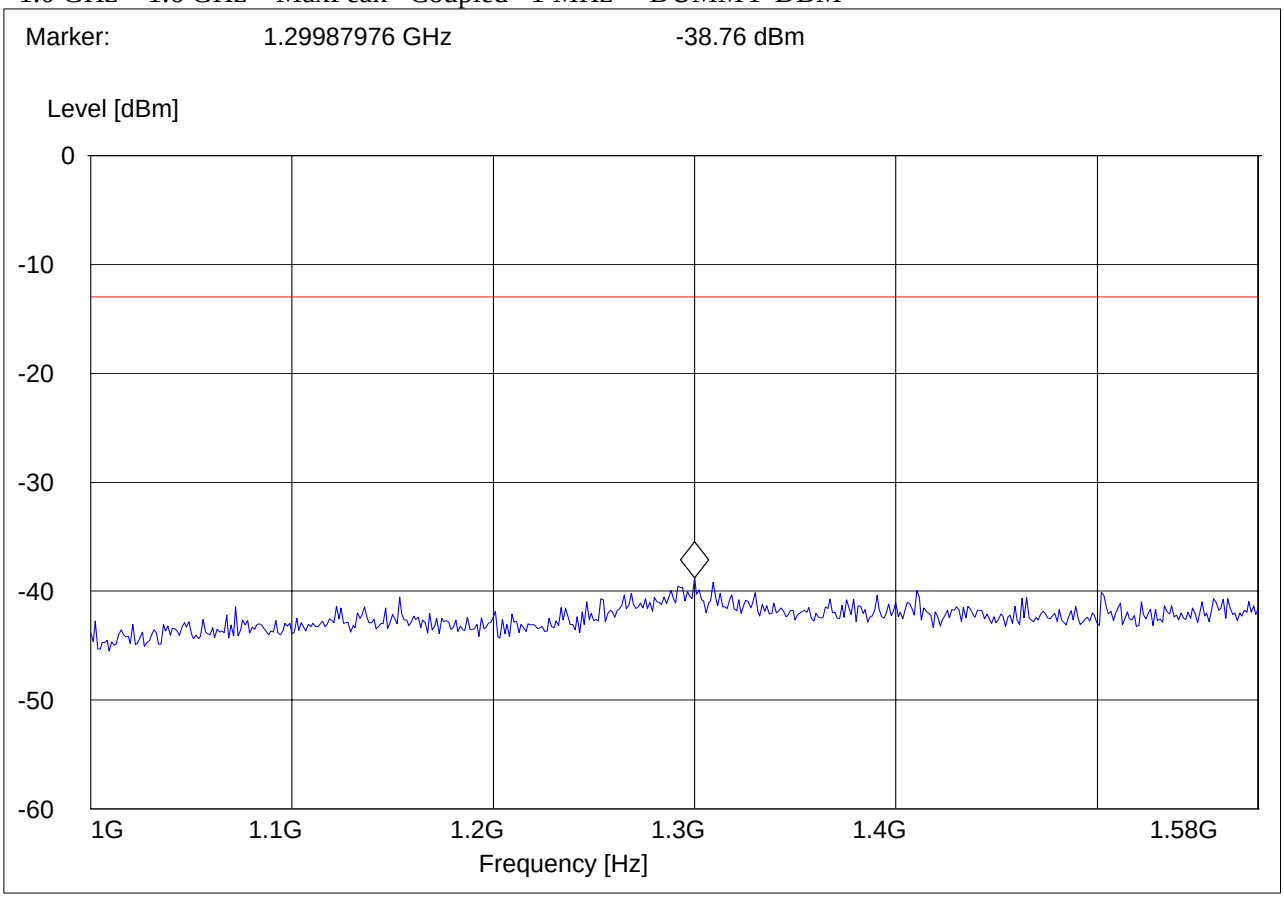
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 836.6MHz: 1GHz – 1.58GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.190
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
SWEEP TABLE: "FCC 22Spuri 1-1.58G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

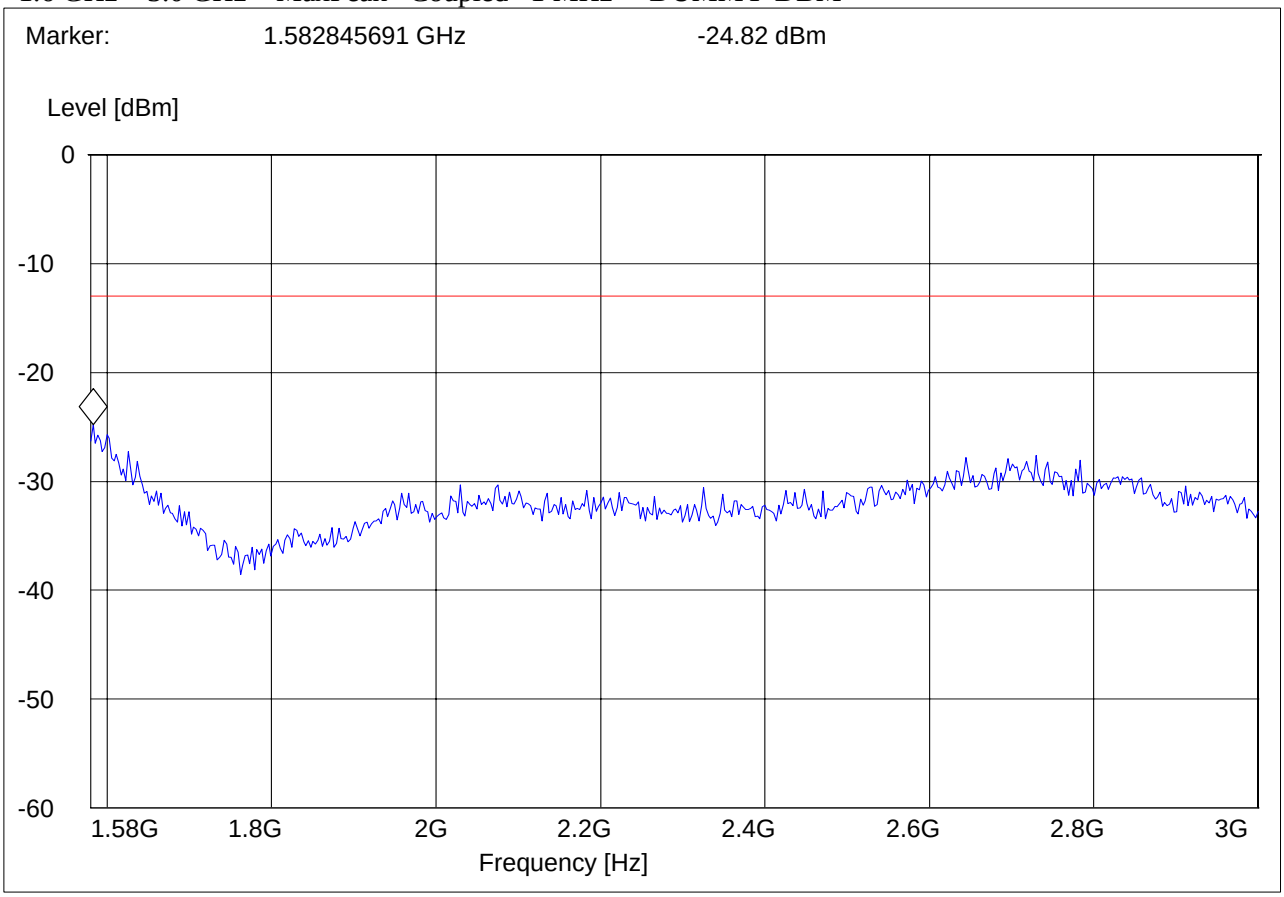


RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 836.6MHz: 1.58GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.190
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 1.58-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



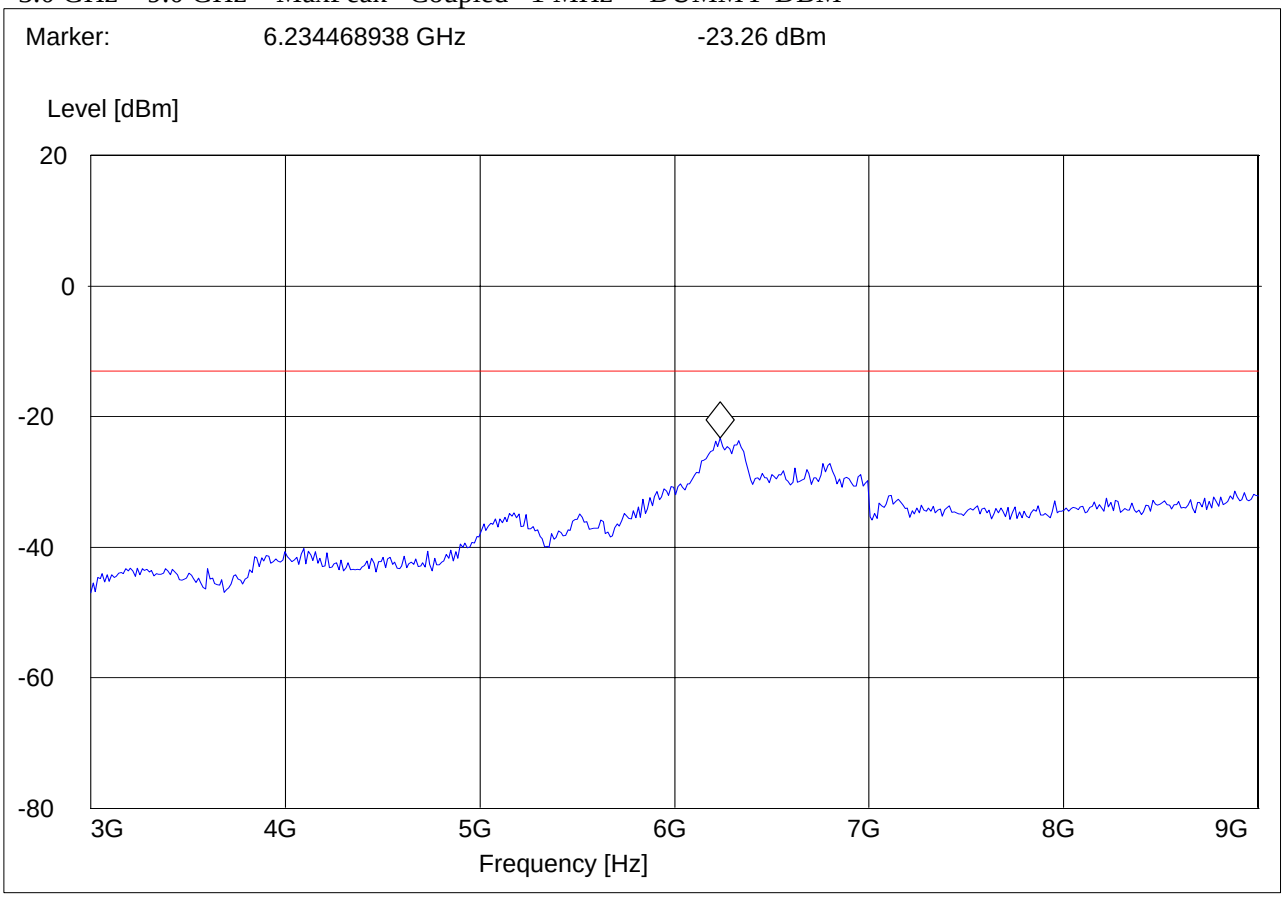
RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 836.6MHz: 3GHz – 9GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.190
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 3-9G"

Short Description: FCC 24 1GHz-8GHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

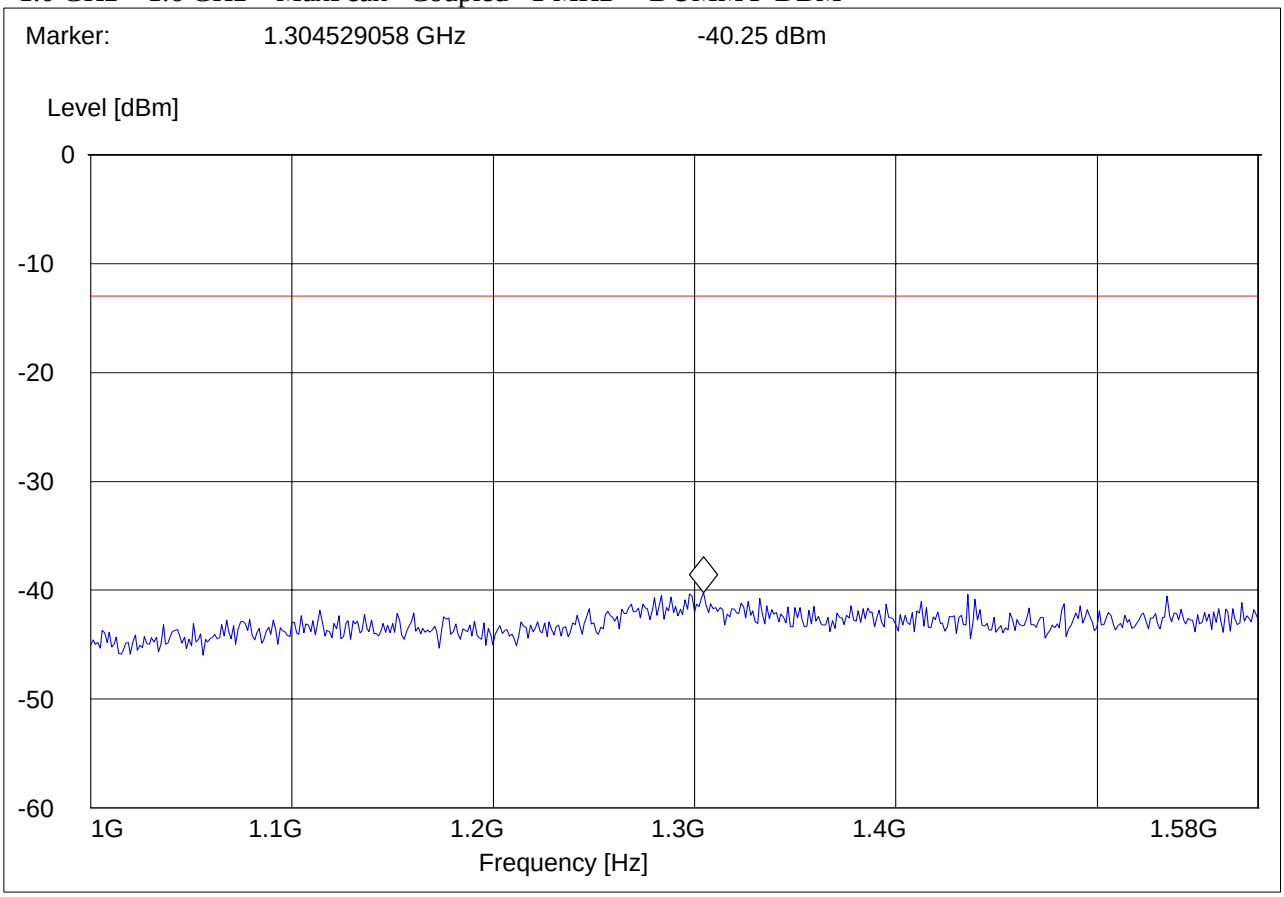


RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 848.8MHz: 1GHz – 1.58GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.251
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 1-1.58G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

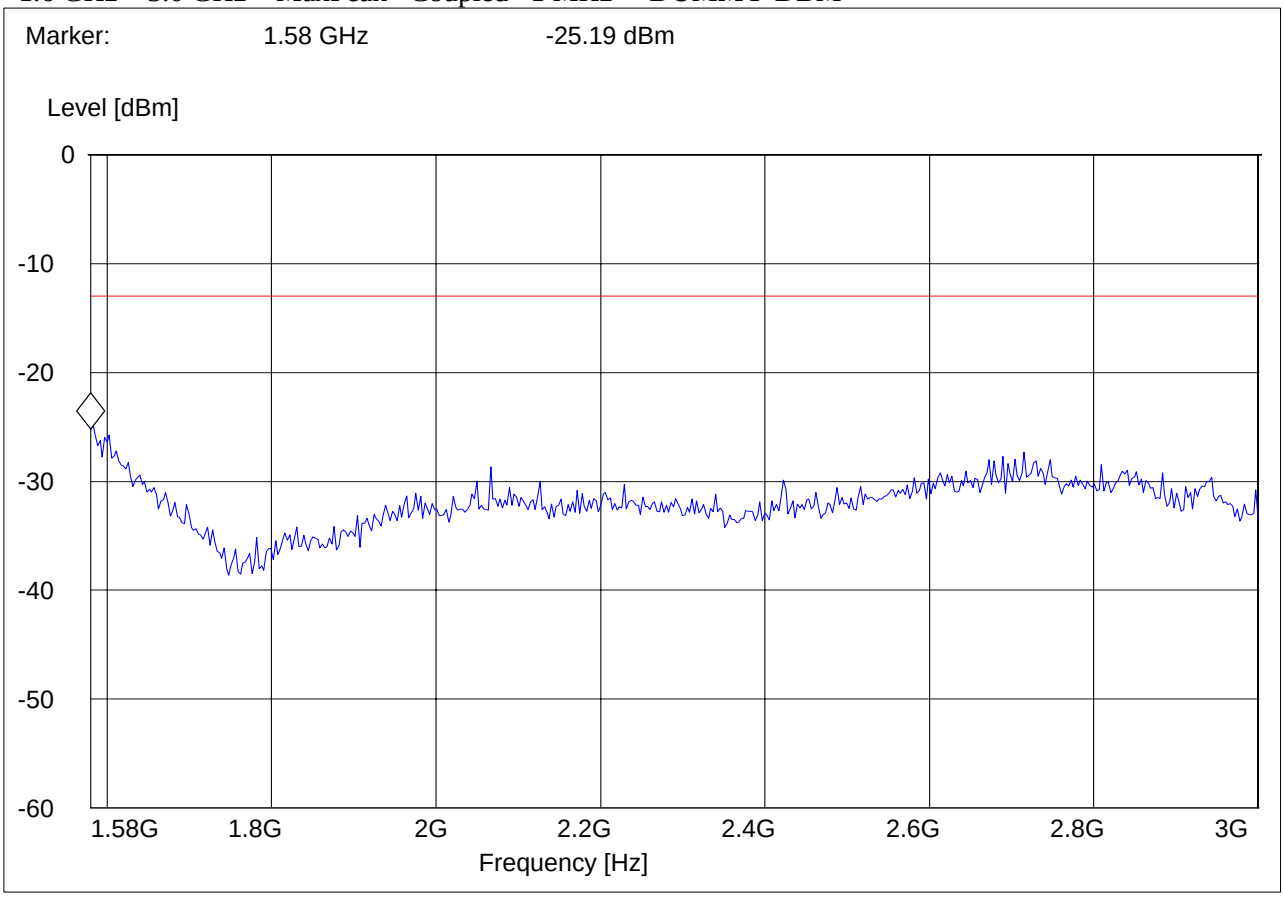


RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 848.8MHz: 1.58GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.251
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 1.58-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



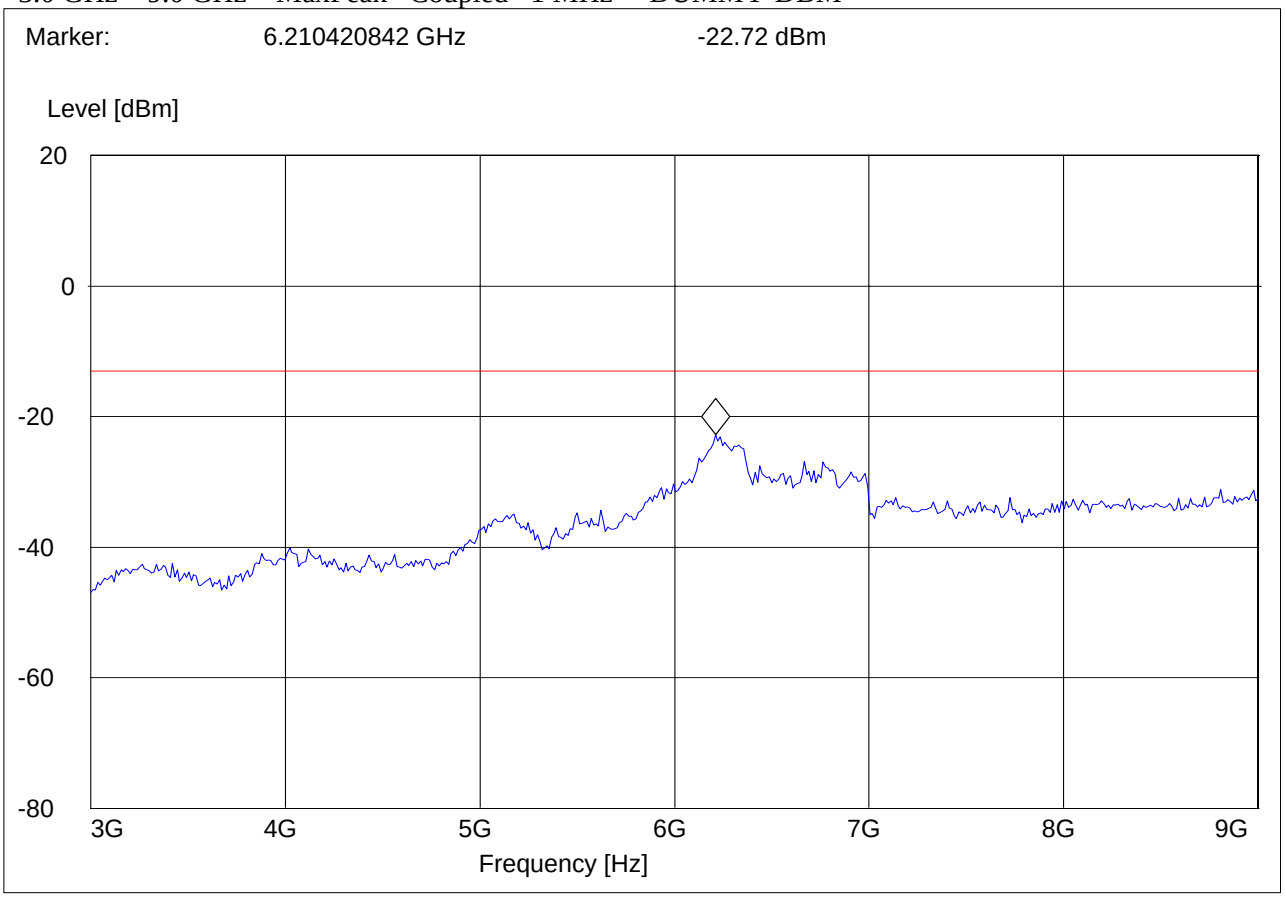
RADIATED SPURIOUS EMISSIONS (GSM-850)
Tx @ 848.8MHz: 3GHz – 9GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 850MHz; CH.251
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 3-9G"

Short Description: FCC 24 1GHz-8GHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



5.2.4.3 RESULTS OF RADIATED TESTS GSM-850 FDD5:

Harmonics	Tx ch-4132 Freq. (MHz)	Level (dBm)	Tx ch-4183 Freq. (MHz)	Level (dBm)	Tx ch-4233 Freq. (MHz)	Level (dBm)
2	**1648.4**	NF	**1673.2**	NF	**1697.6**	NF
3	**2472.6**	NF	**2509.8**	NF	**2546.4**	NF
4	**3296.8**	NF	**3346.4**	NF	**3395.2**	NF
5	**4121**	NF	**4183**	NF	**4244**	NF
6	**4945.2**	NF	**5019.6**	NF	**5092.8**	NF
7	**5769.4**	NF	**5856.2**	NF	**5941.6**	NF
8	**6593.6**	NF	**6692.8**	NF	**6790.4**	NF
9	**7417.8**	NF	**7529.4**	NF	**7639.2**	NF
10	**8242**	NF	**8366**	NF	**8488**	NF
NF = NOISE FLOOR						

5.2.4.4 RADIATED SPURIOUS EMISSIONS (GSM-850 FDD5)

TX: 30MHz - 1GHz

Spurious emission limit –13dBm

Antenna: vertical

Note:

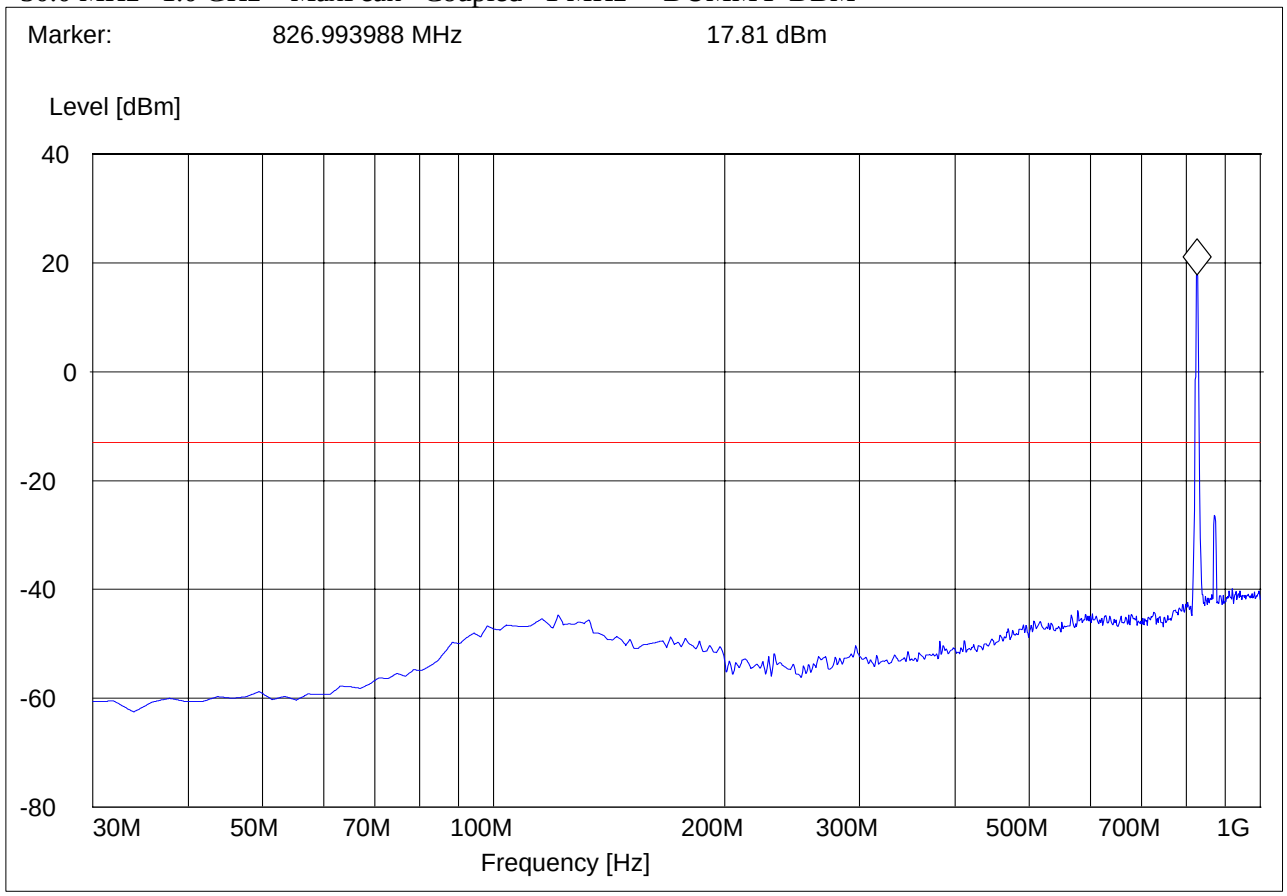
1.The peak above the limit line is the carrier freq.

2.This plot is valid for low, mid & high channels (worst-case plot)

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4132
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop

SWEEP TABLE: "FCC 24 Spur 30M-1G_V"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

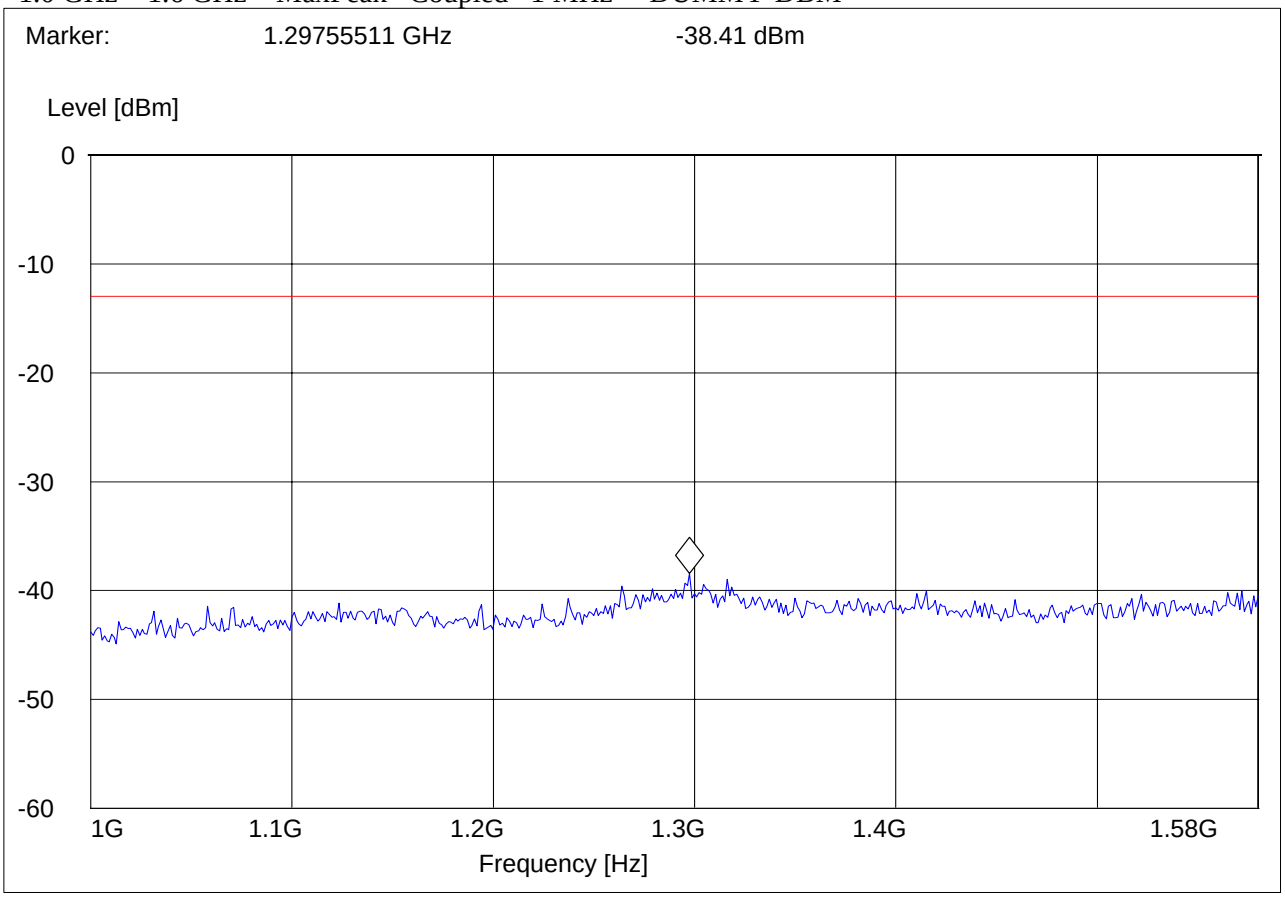


RADIATED SPURIOUS EMISSIONS (GSM-850 FDD5)
Tx @ 826.4MHz: 1GHz – 1.58GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4132
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 1-1.58G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

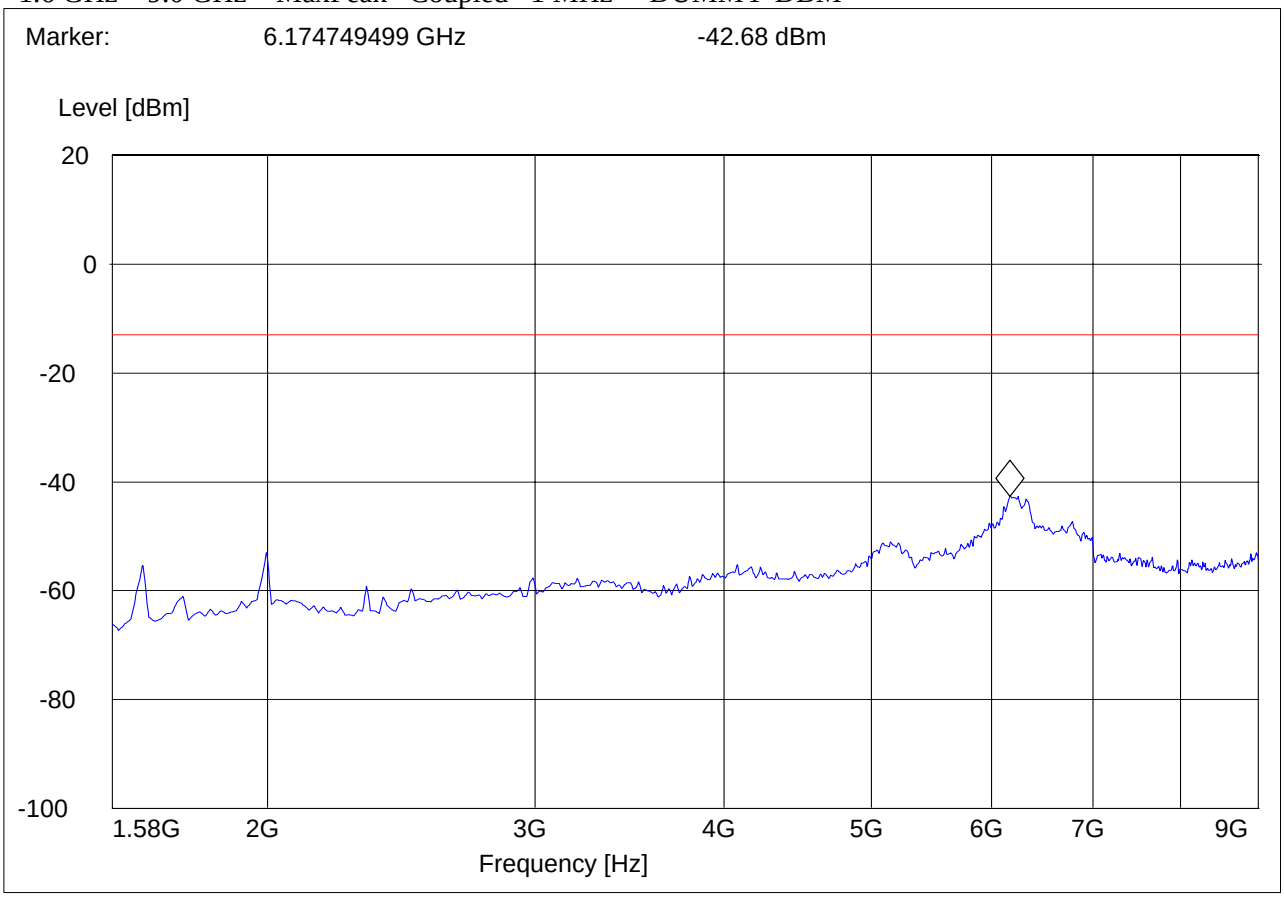


RADIATED SPURIOUS EMISSIONS (GSM-850 FDD5)
Tx @ 826.4MHz: 1.58GHz – 9GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4132
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop

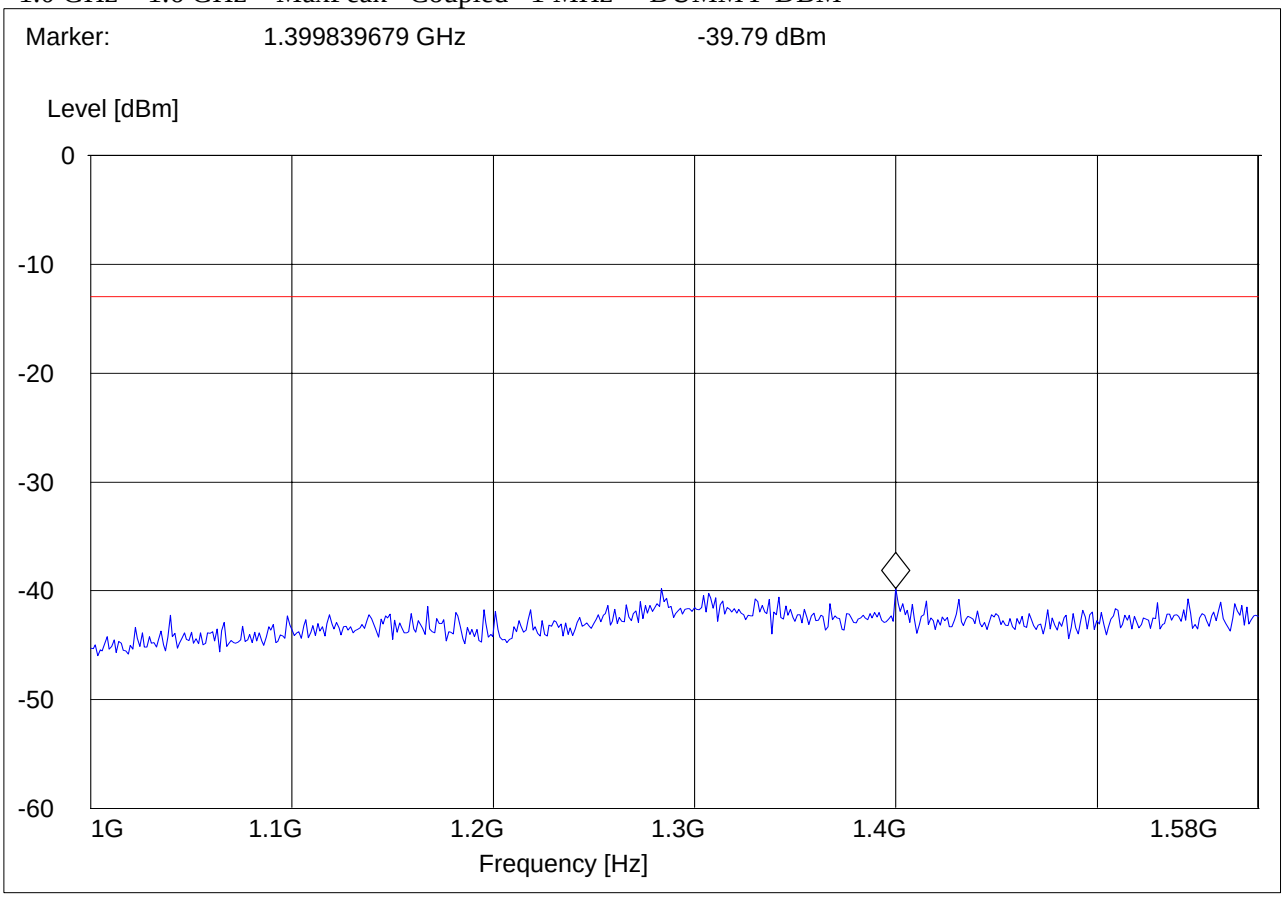
SWEEP TABLE: "FCC 22Spuri 1.58-9G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850 FDD5)
Tx @ 836.6MHz: 1GHz – 1.58GHz
EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4183
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:
SWEEP TABLE: "FCC 22Spuri 1-1.58G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

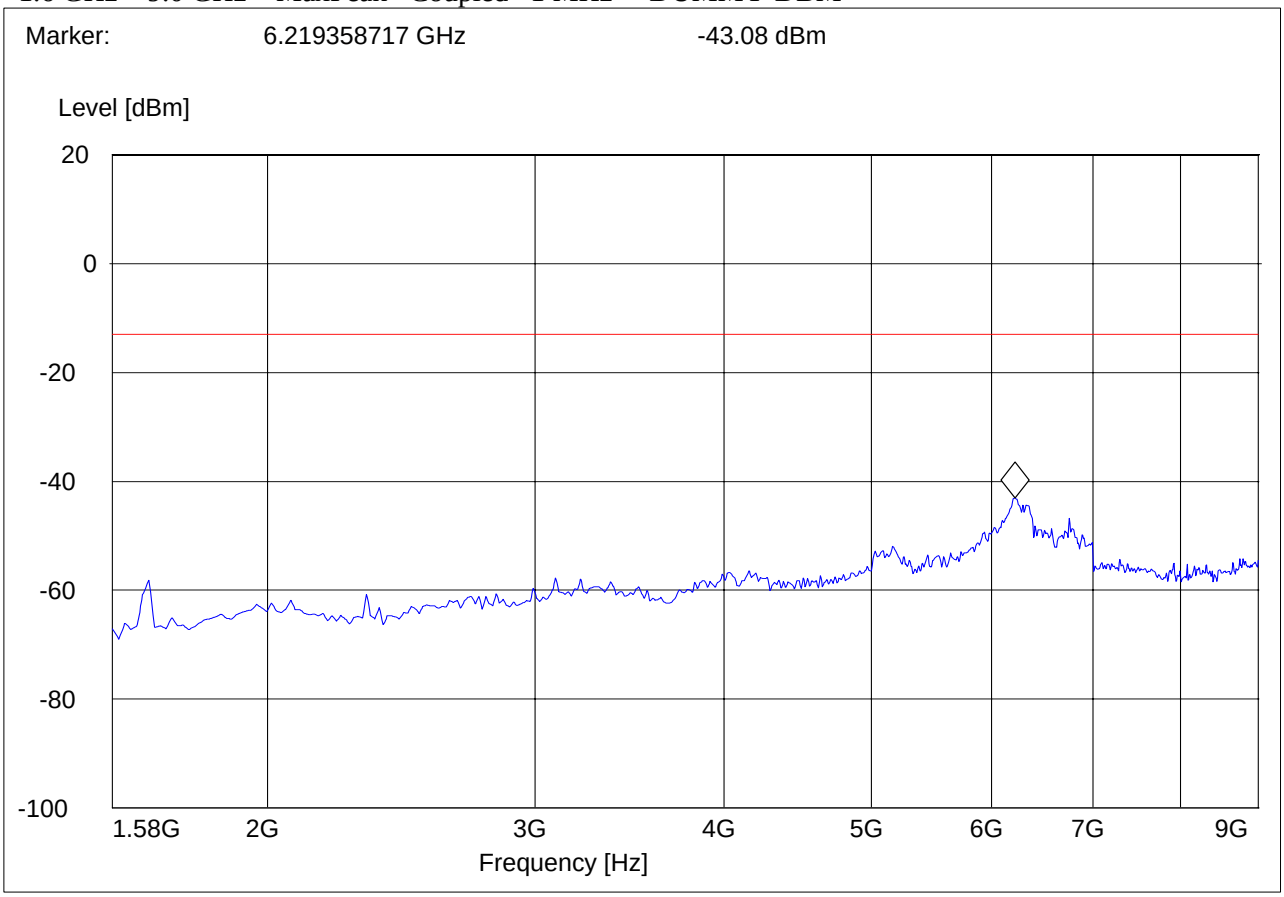


RADIATED SPURIOUS EMISSIONS (GSM-850 FDD5)
Tx @ 836.6MHz: 1.58GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4183
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 1.58-9G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

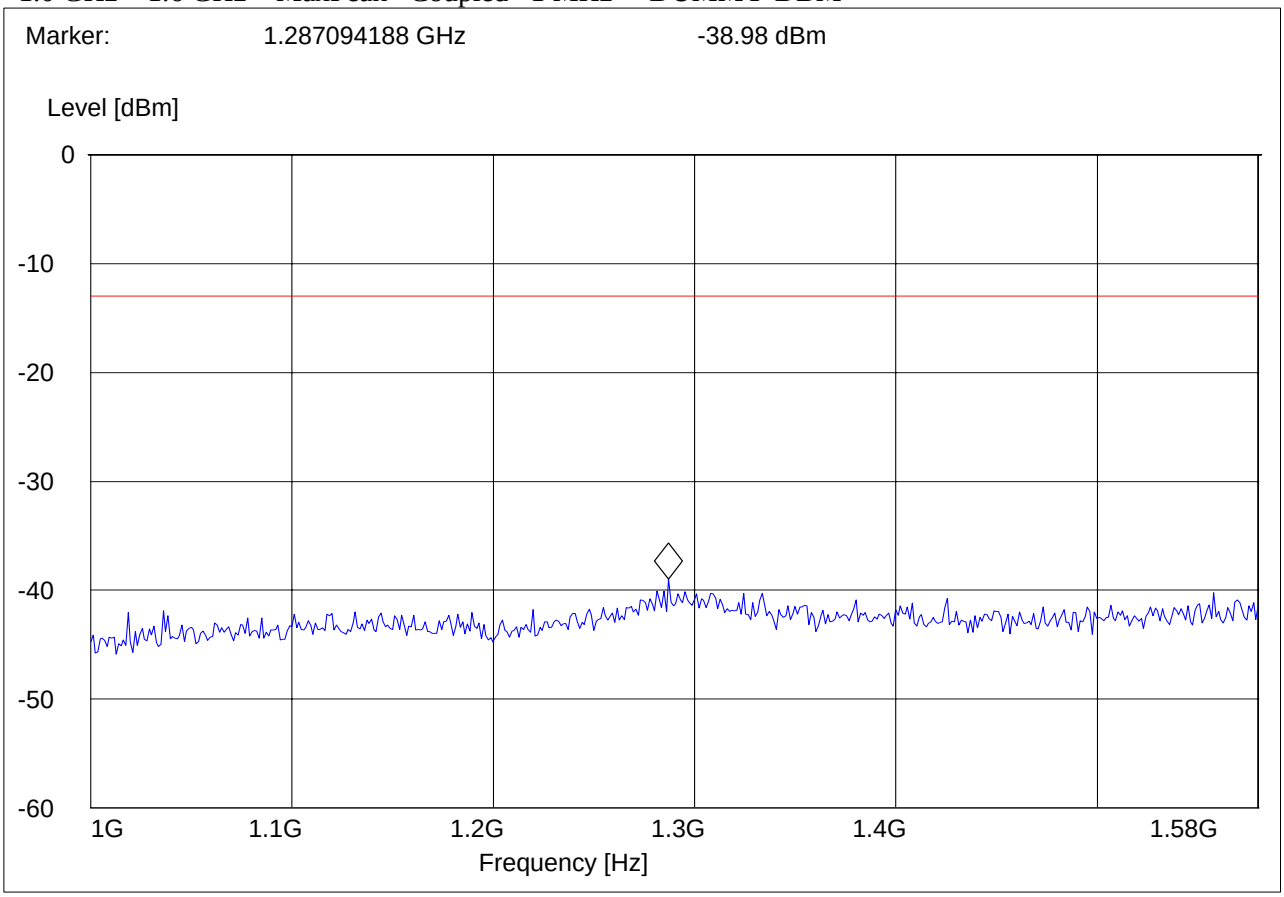


RADIATED SPURIOUS EMISSIONS (GSM-850 FDD5)
Tx @ 846.6MHz: 1GHz – 1.58GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4183
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 1-1.58G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

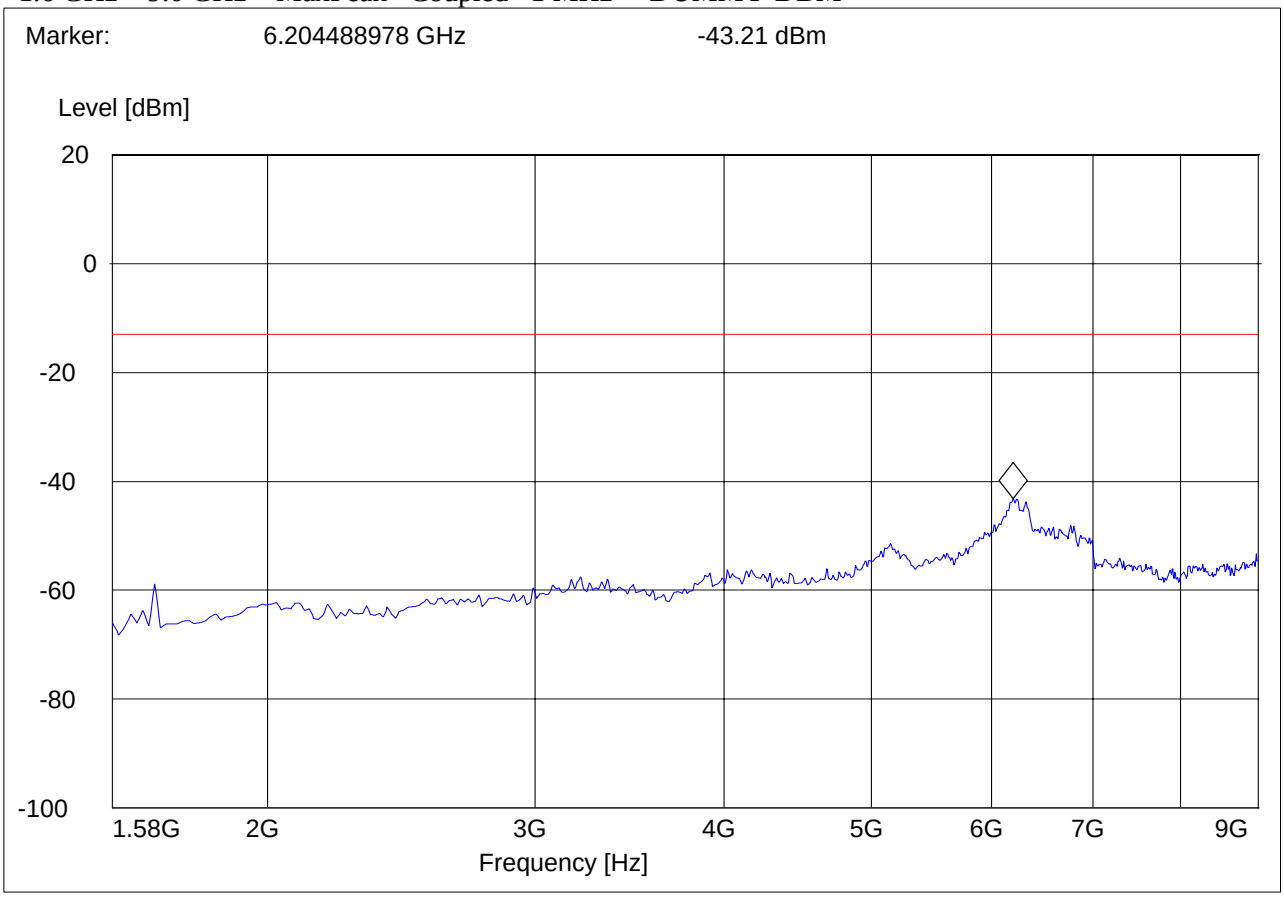


RADIATED SPURIOUS EMISSIONS (GSM-850 FDD5)
Tx @ 846.6MHz: 1.58GHz – 9GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD5; CH 4183
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 22Spuri 1.58-9G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



5.2.4.5 RESULTS OF RADIATED TESTS PCS-1900:

Harmonic	Tx ch-512 Freq.(MHz)	Level (dBm)	Tx ch-661 Freq. (MHz)	Level (dBm)	Tx ch-810 Freq. (MHz)	Level (dBm)
2	**3700.4**	NF	**3760**	NF	**3819.6**	NF
3	**5550.6**	NF	**5640**	NF	**5729.4**	NF
4	**7400.8**	NF	**7520**	NF	**7639.2**	NF
5	**9251**	NF	**9400**	NF	**9549**	NF
6	**11101.2**	NF	**11280**	NF	**11458.8**	NF
7	**12951.4**	NF	**13160**	NF	**13368.6**	NF
8	**14801.6**	NF	**15040**	NF	**15278.4**	NF
9	**16651.8**	NF	**16920**	NF	**17188.2**	NF
10	**18502**	NF	**18800**	NF	**19098**	NF
NF = NOISE FLOOR						

5.2.4.6 RADIATED SPURIOUS EMISSIONS(PCS 1900)

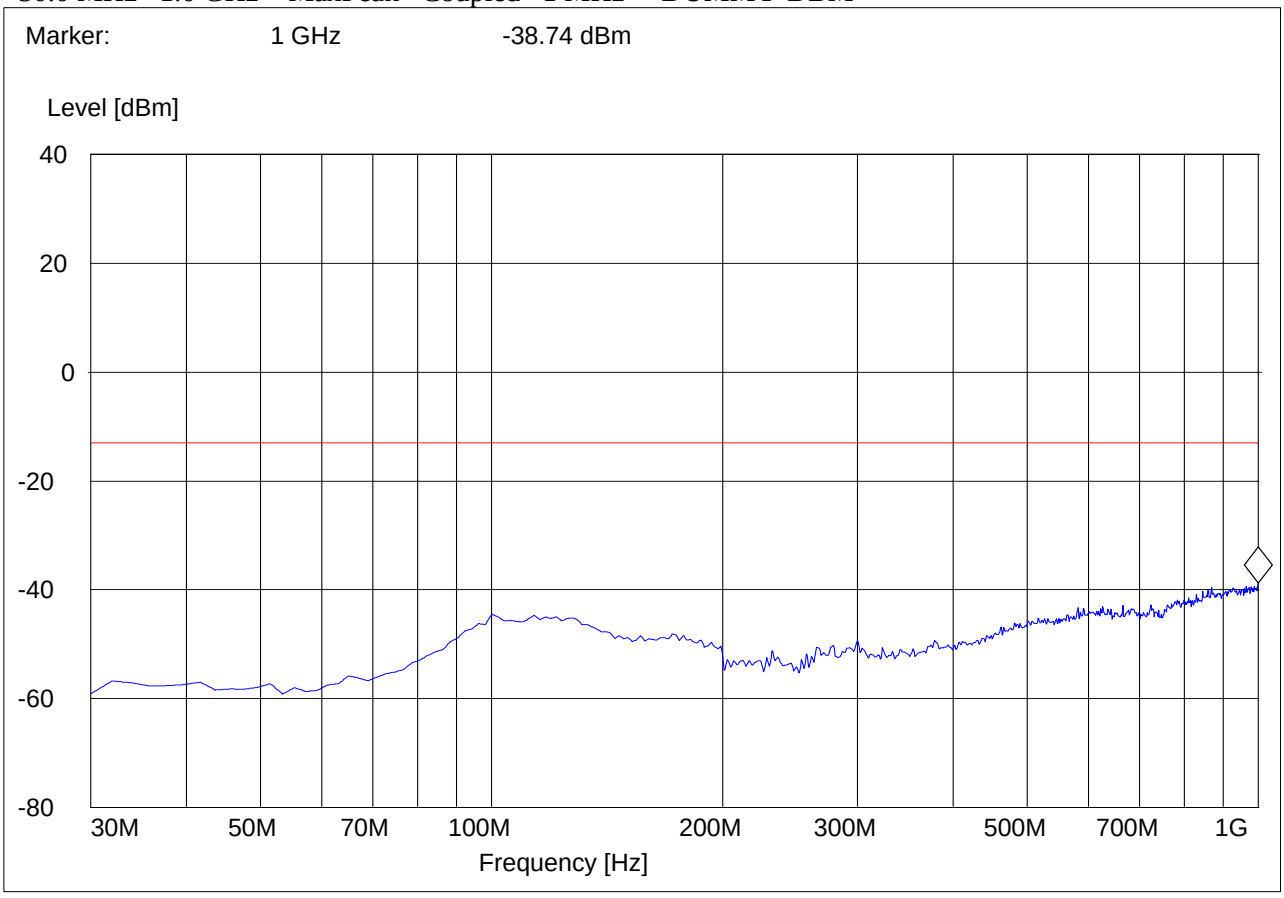
TX: 30MHz - 1GHz
Spurious emission limit –13dBm
Antenna: vertical

Note: This plot is valid for low, mid & high channels (worst-case plot)

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 512
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop

SWEEP TABLE: "FCC 24 Spur 30M-1G_V"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

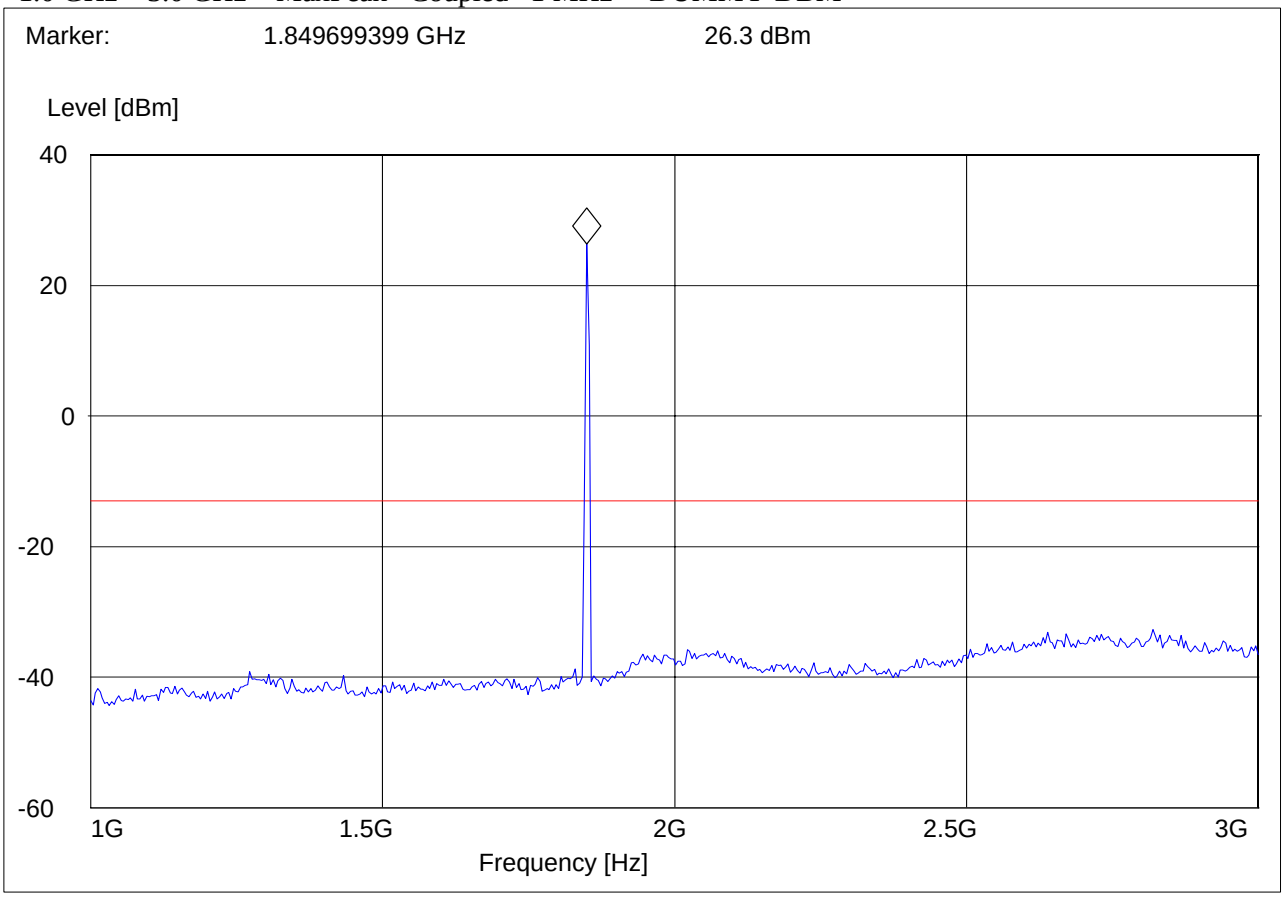


RADIATED SPURIOUS EMISSIONS(PCS 1900)
Tx @ 1850.2MHz: 1GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 512
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

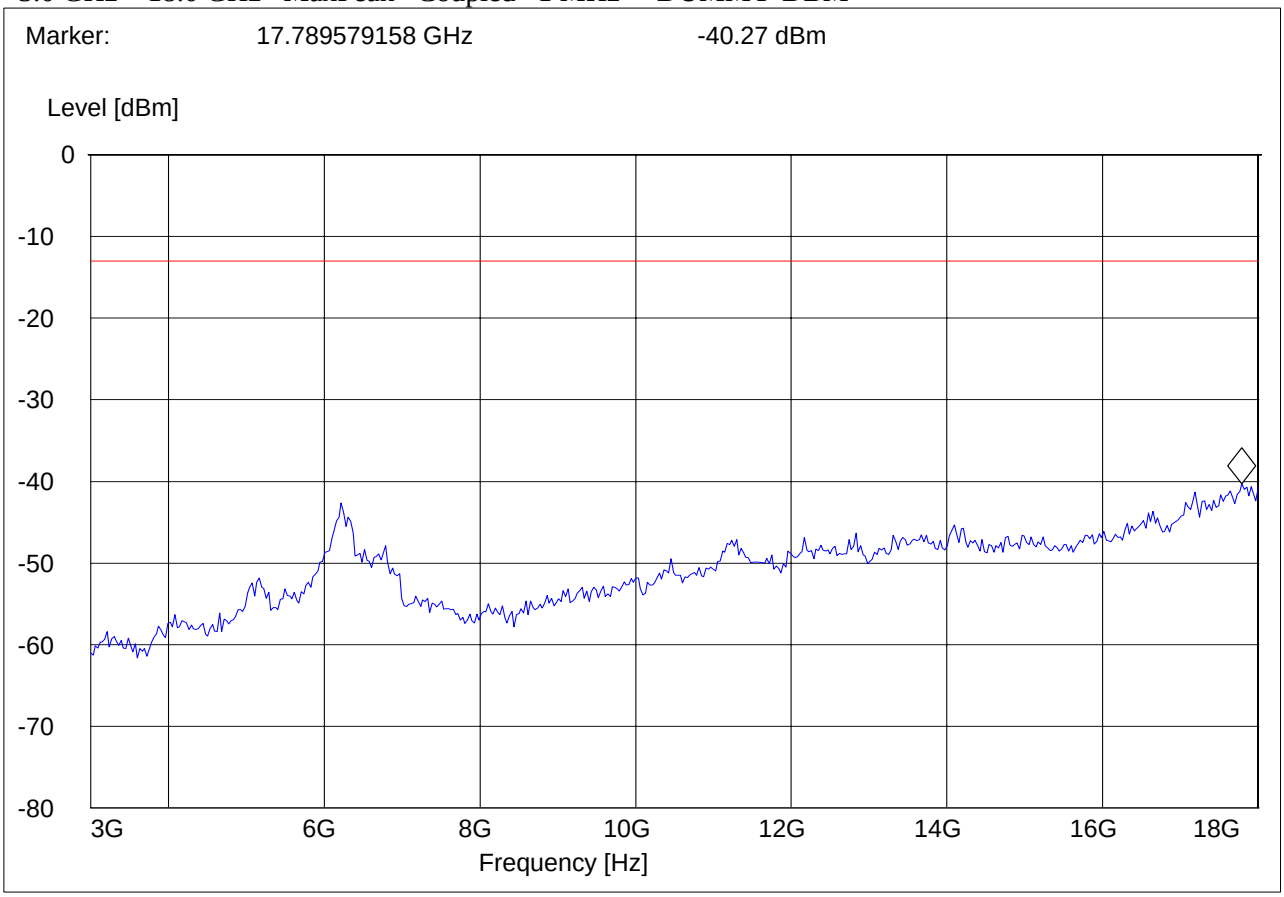


RADIATED SPURIOUS EMISSIONS(PCS 1900)
Tx @ 1850.2MHz: 3GHz – 18GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 512
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

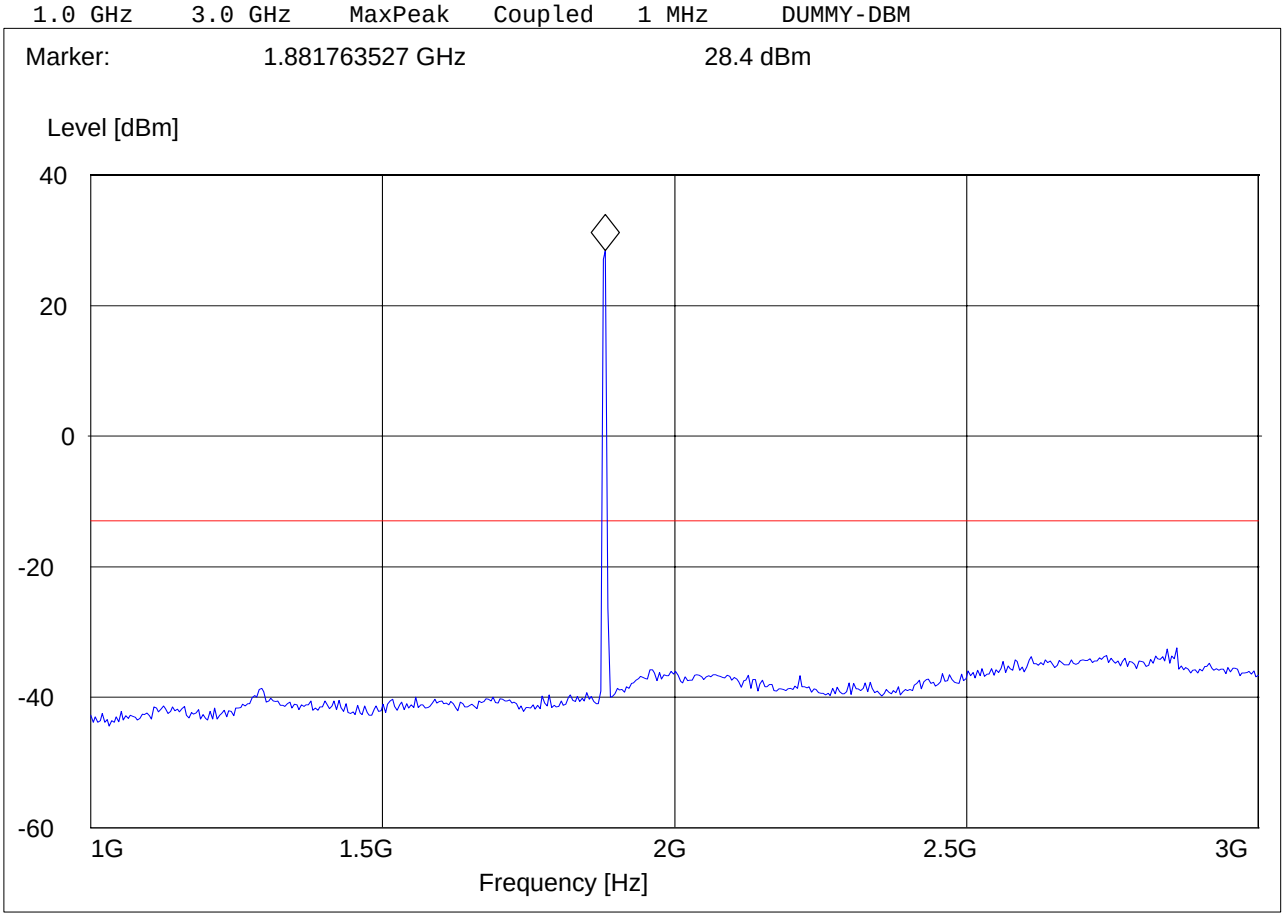


RADIATED SPURIOUS EMISSIONS(PCS 1900)
Tx @ 1880.0MHz: 1GHz – 3GHz

```
EUT:              OA3541 PCMCIA Network Card
Customer::        Alcatel Lucent
Test Mode:        GSM 1900; CH 661
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC Laptop
Comments:         Marker placed on uplink
```

SWEEP TABLE: "FCC 24Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

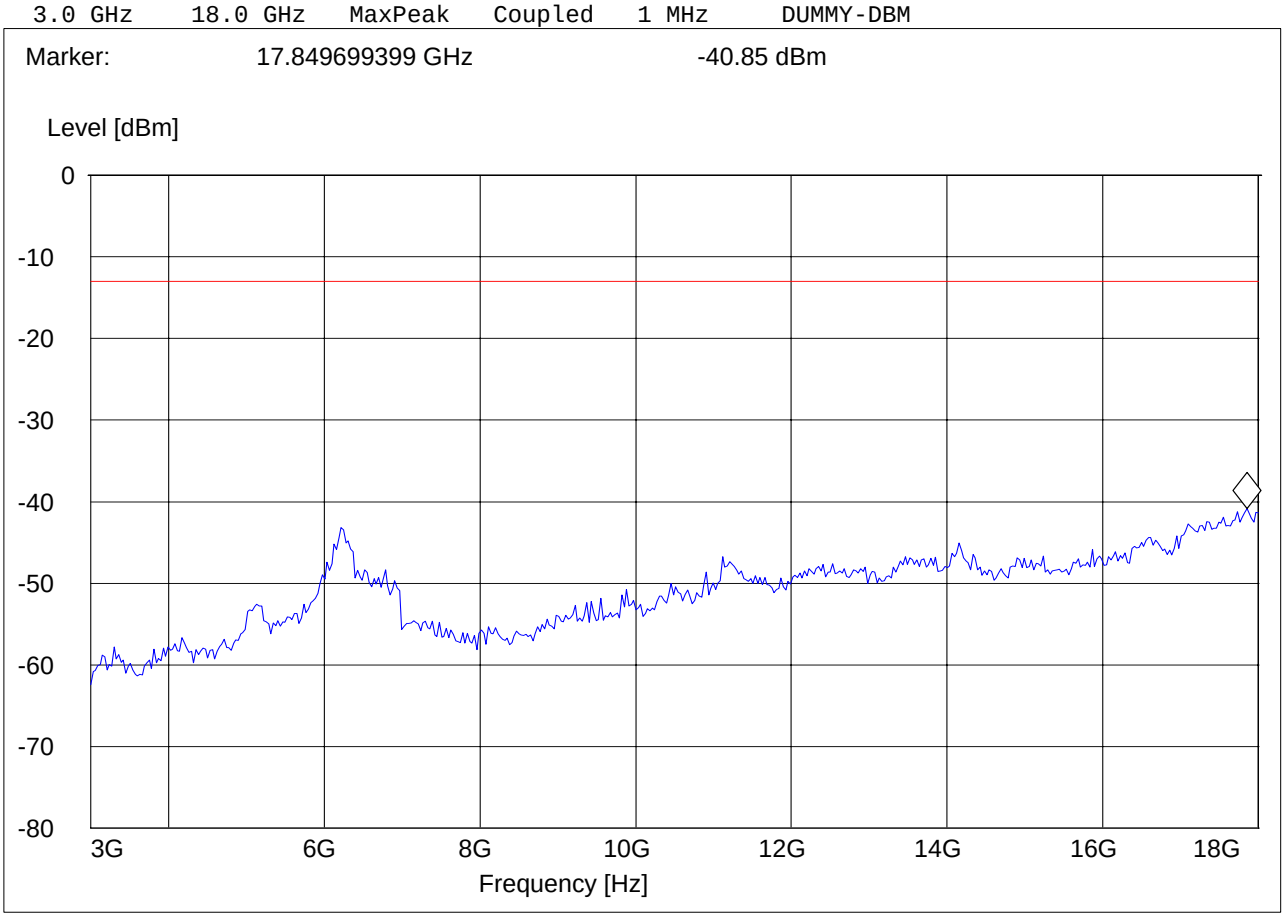


RADIATED SPURIOUS EMISSIONS(PCS 1900)
Tx @ 1880.0MHz: 3GHz – 18GHz

```
EUT:              OA3541 PCMCIA Network Card
Customer::        Alcatel Lucent
Test Mode:        GSM 1900; CH 661
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC Laptop
Comments:
```

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

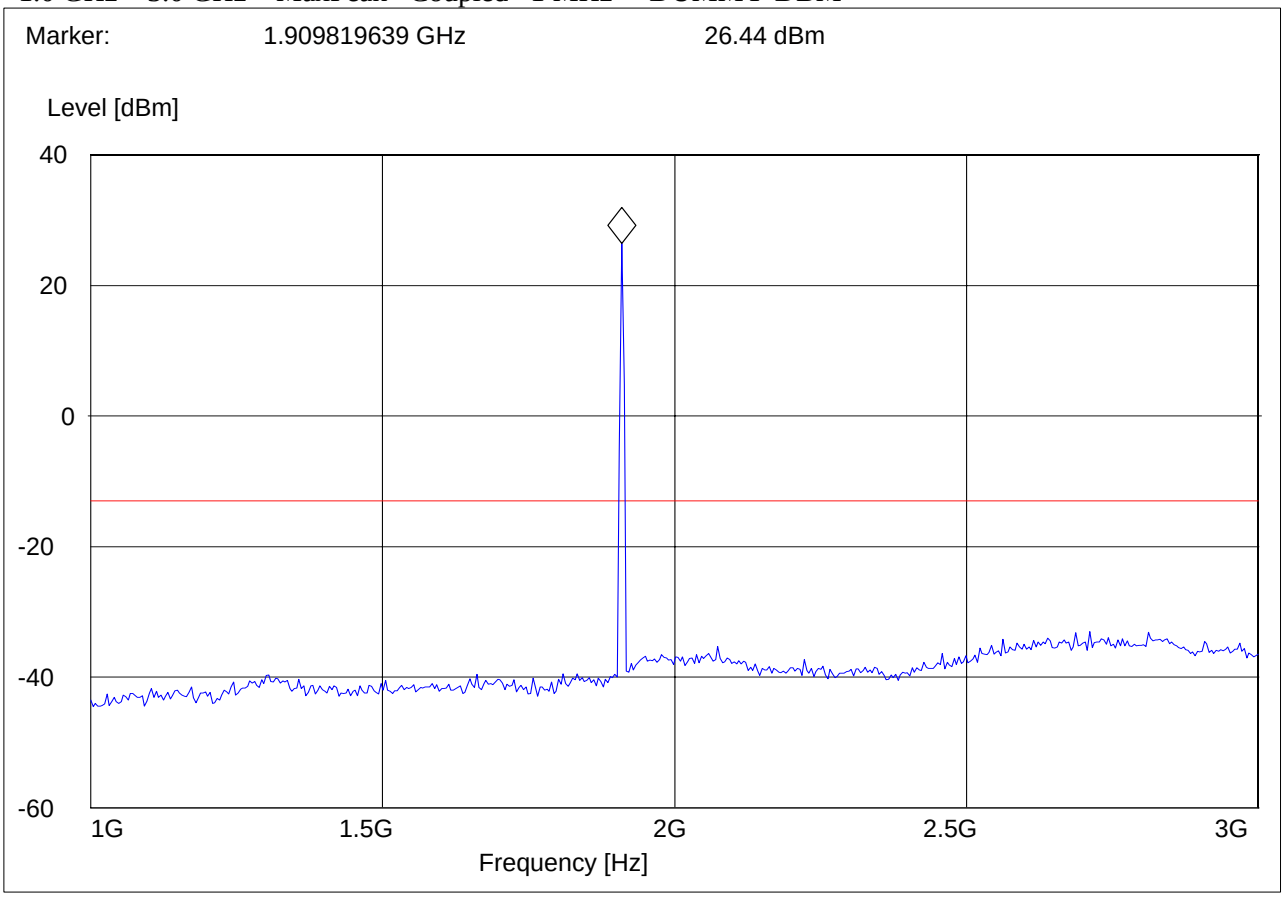


RADIATED SPURIOUS EMISSIONS(PCS 1900)
Tx @ 1909.8MHz: 1GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 810
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments: Marker placed on uplink

SWEEP TABLE: "FCC 24Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

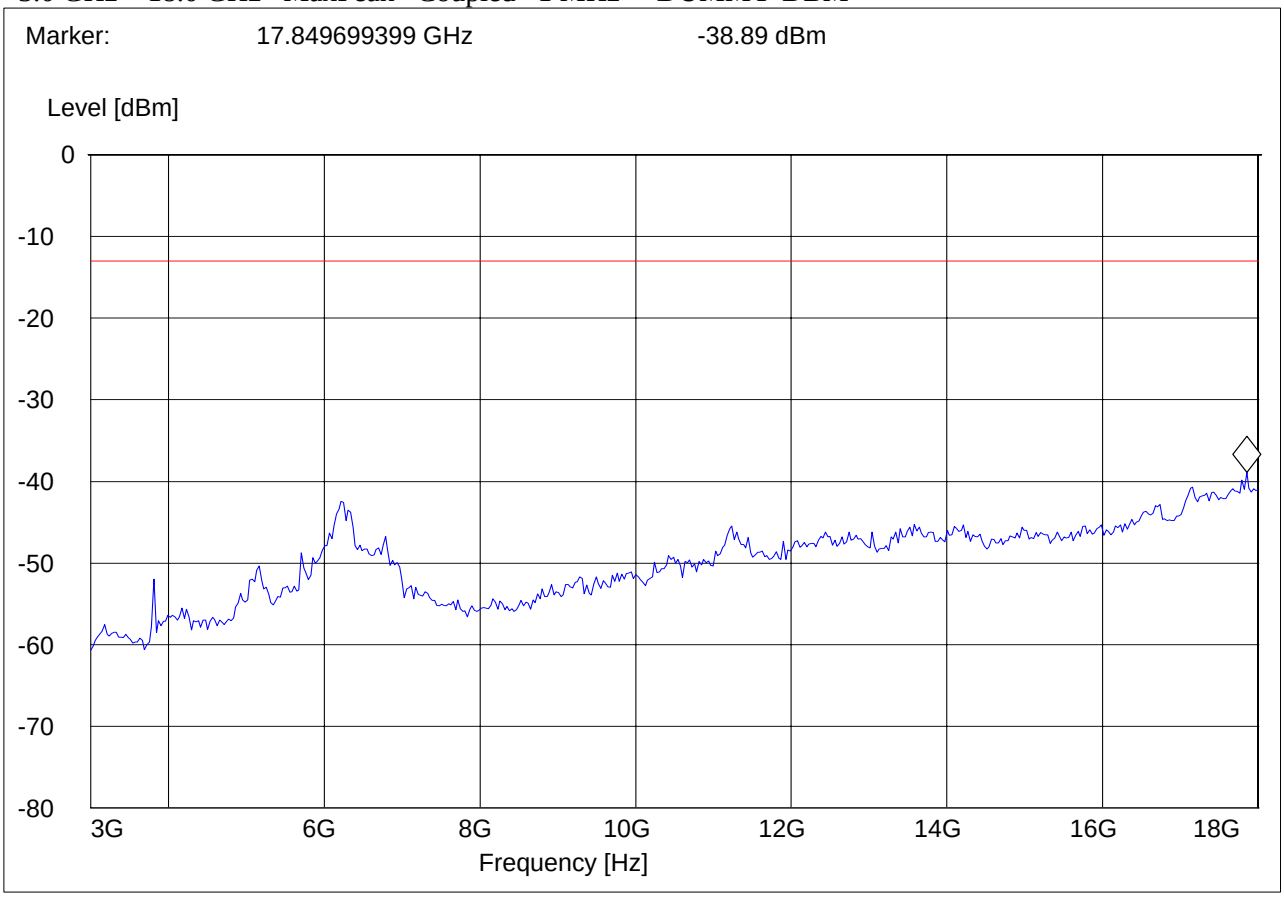


RADIATED SPURIOUS EMISSIONS(PCS 1900)
Tx @ 1909.8MHz: 3GHz – 18GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 810
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

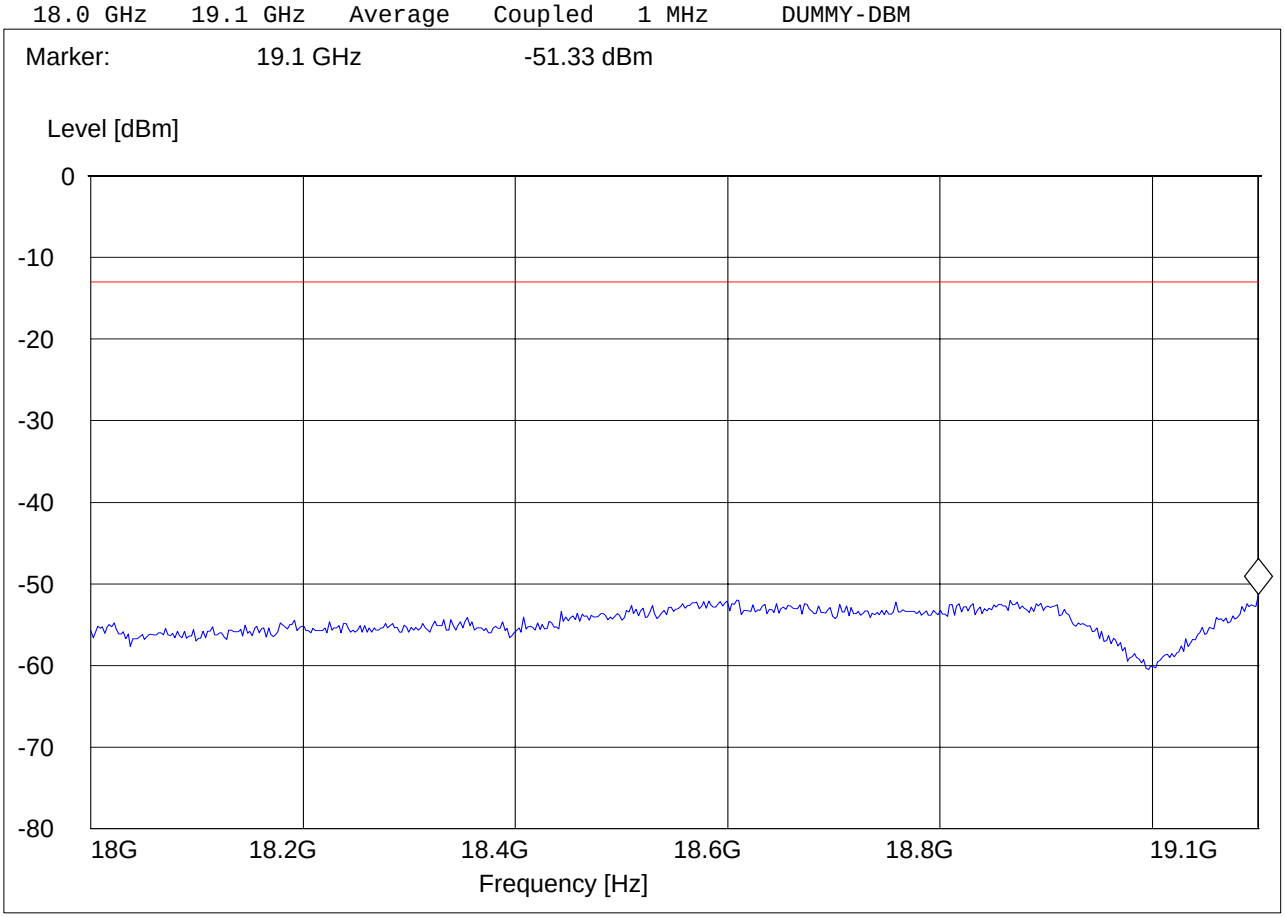


RADIATED SPURIOUS EMISSIONS(PCS 1900)
18GHz – 19.1GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900; CH 661
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24spuri 18-19.1G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	19.1 GHz	Average	Coupled	1 MHz	DUMMY-DBM



5.2.4.7 RESULTS OF RADIATED TESTS PCS-1900: FDD2

Harmonic	Tx ch-9262 Freq.(MHz)	Level (dBm)	Tx ch-9400 Freq. (MHz)	Level (dBm)	Tx ch-9538 Freq. (MHz)	Level (dBm)
2	**3700.4**	NF	**3760**	NF	**3819.6**	NF
3	**5550.6**	NF	**5640**	NF	**5729.4**	NF
4	**7400.8**	NF	**7520**	NF	**7639.2**	NF
5	**9251**	NF	**9400**	NF	**9549**	NF
6	**11101.2**	NF	**11280**	NF	**11458.8**	NF
7	**12951.4**	NF	**13160**	NF	**13368.6**	NF
8	**14801.6**	NF	**15040**	NF	**15278.4**	NF
9	**16651.8**	NF	**16920**	NF	**17188.2**	NF
10	**18502**	NF	**18800**	NF	**19098**	NF
NF = NOISE FLOOR						

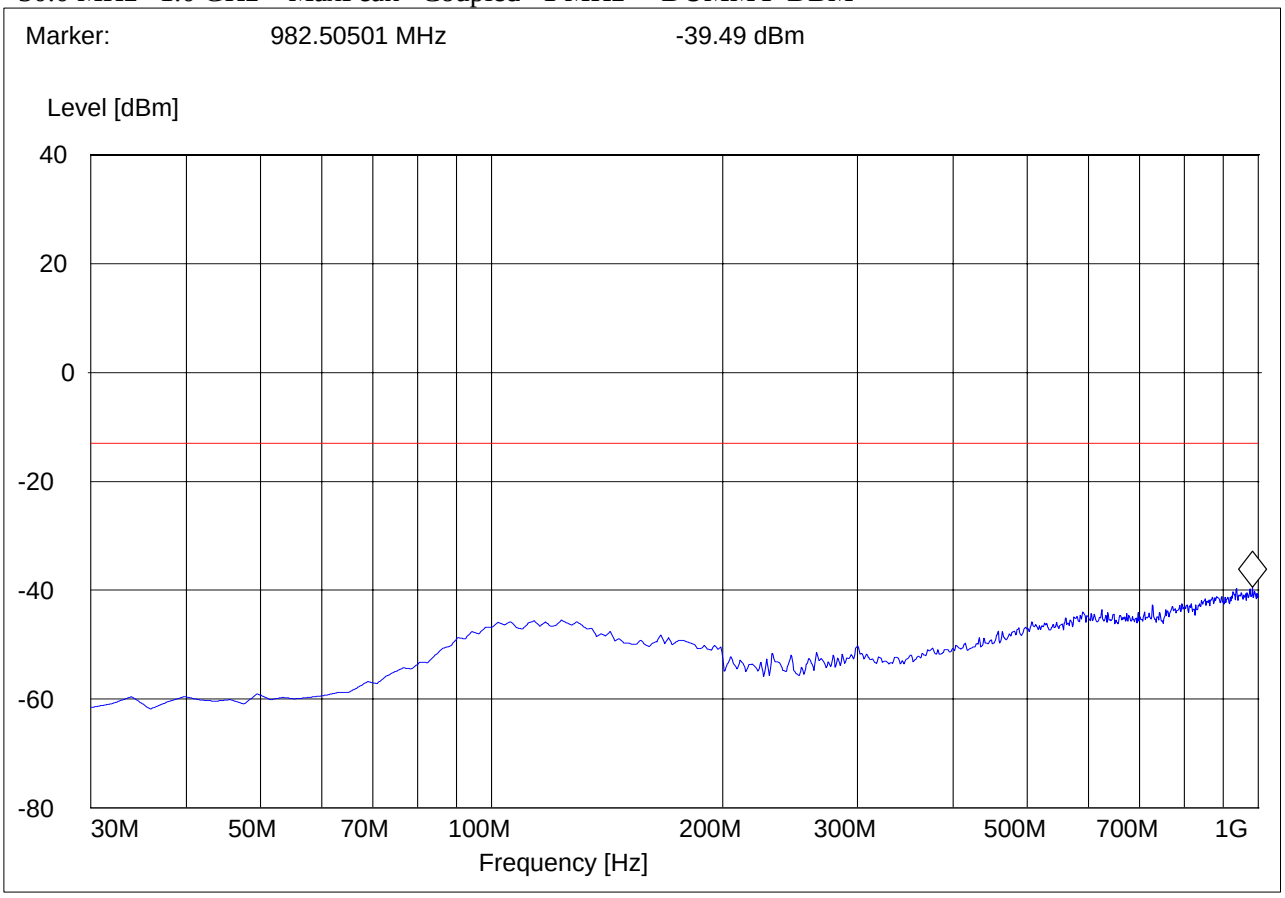
5.2.4.8 RADIATED SPURIOUS EMISSIONS(PCS 1900 FDD2)

TX: 30MHz - 1GHz Antenna: vertical
Note: This plot is valid for low, mid & high channels (worst-case plot)

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9400
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24 Spur 30M-1G_V"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

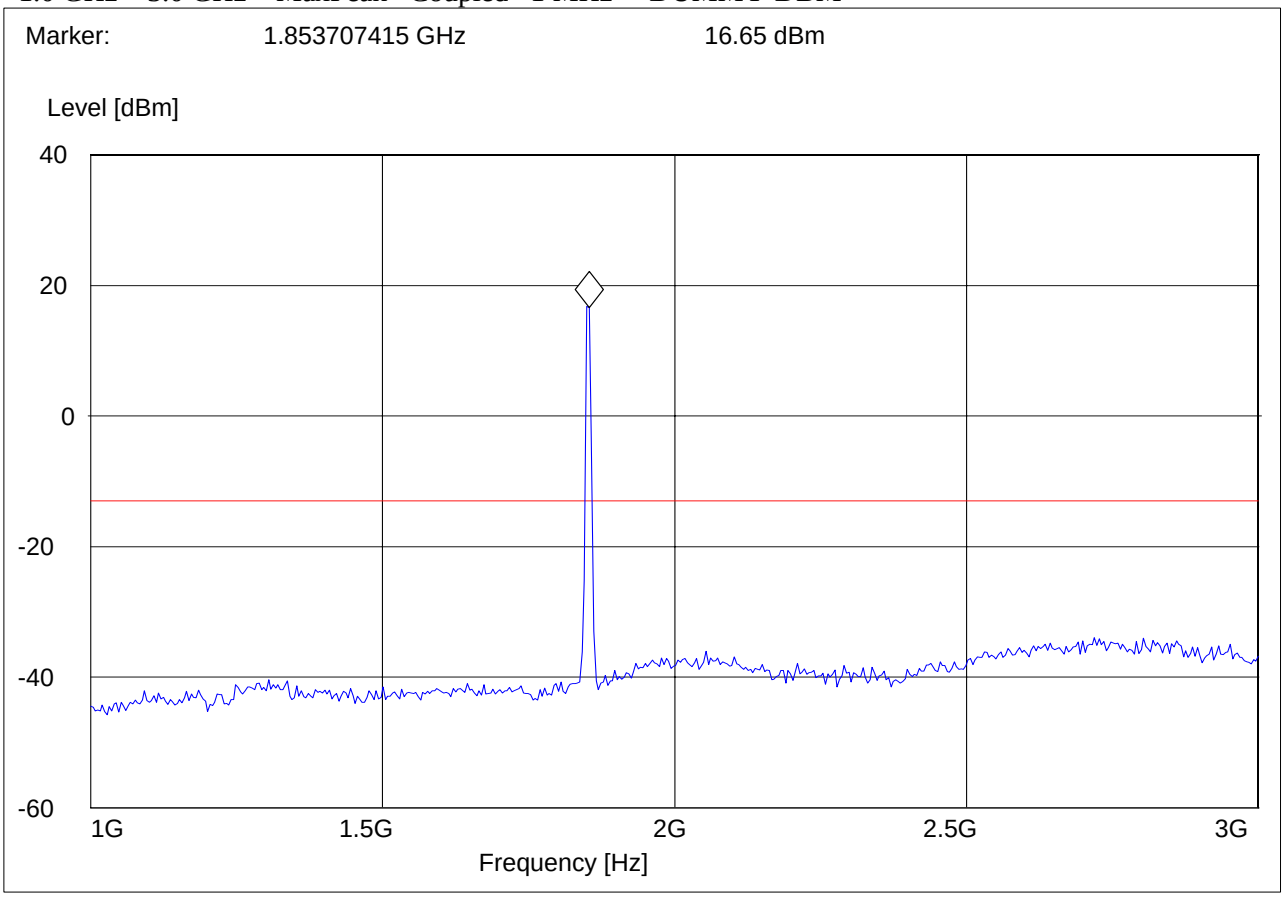


RADIATED SPURIOUS EMISSIONS(PCS 1900 FDD2)
Tx @ 1852.4MHz: 1GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9262
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

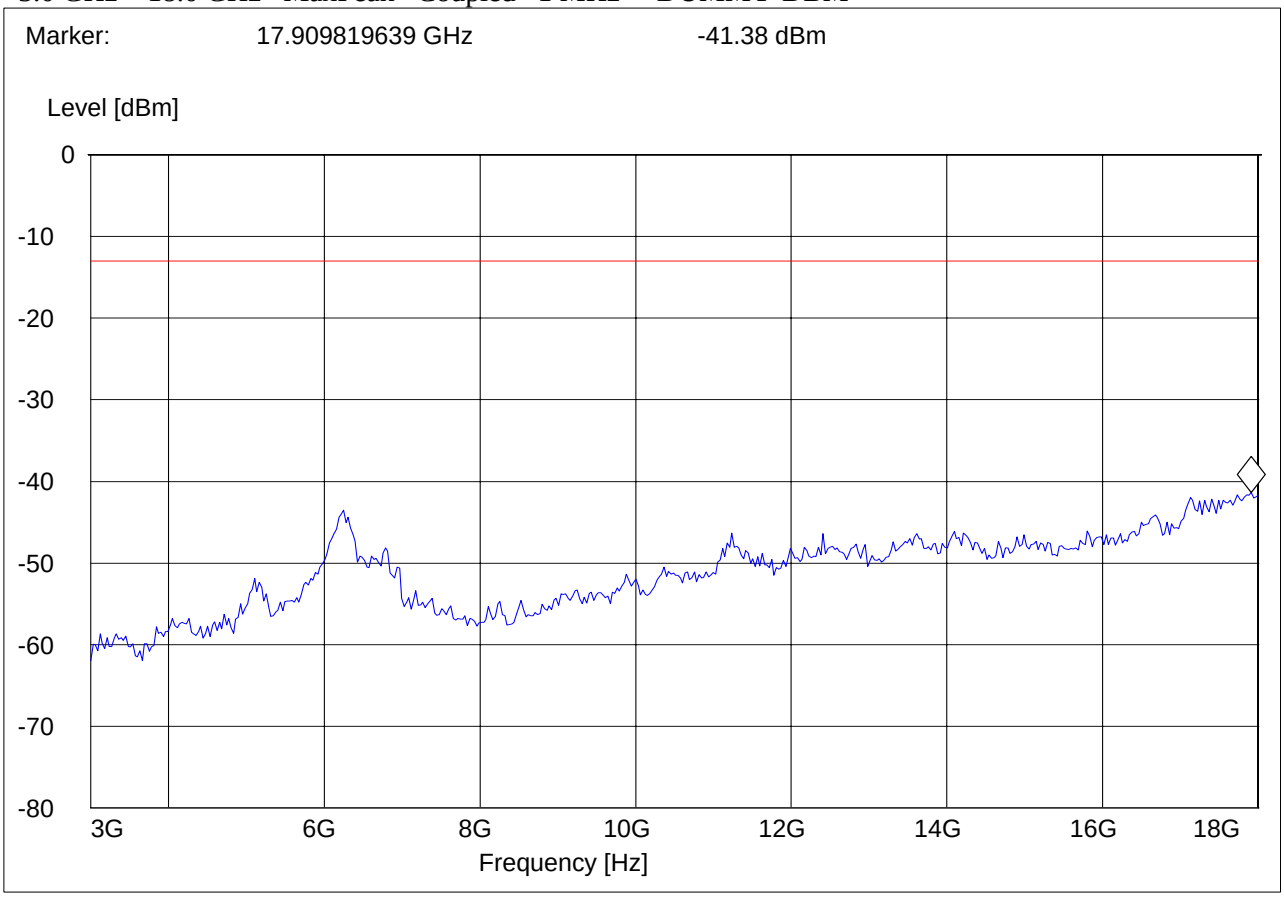


RADIATED SPURIOUS EMISSIONS(PCS 1900 FDD2)
Tx @ 1852.4MHz: 3GHz – 18GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9262
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

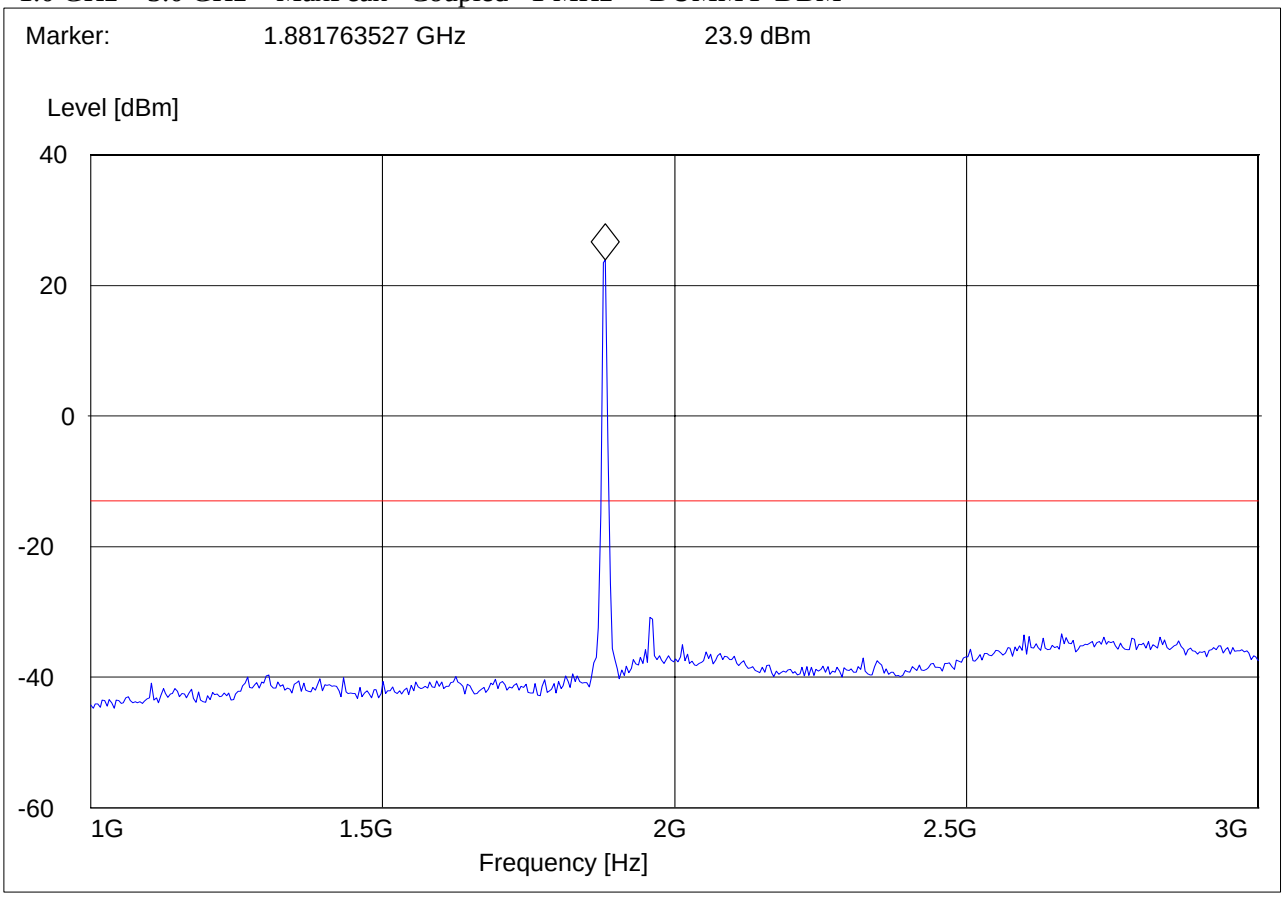


RADIATED SPURIOUS EMISSIONS(PCS 1900 FDD2)
Tx @ 1880.0MHz: 1GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9400
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

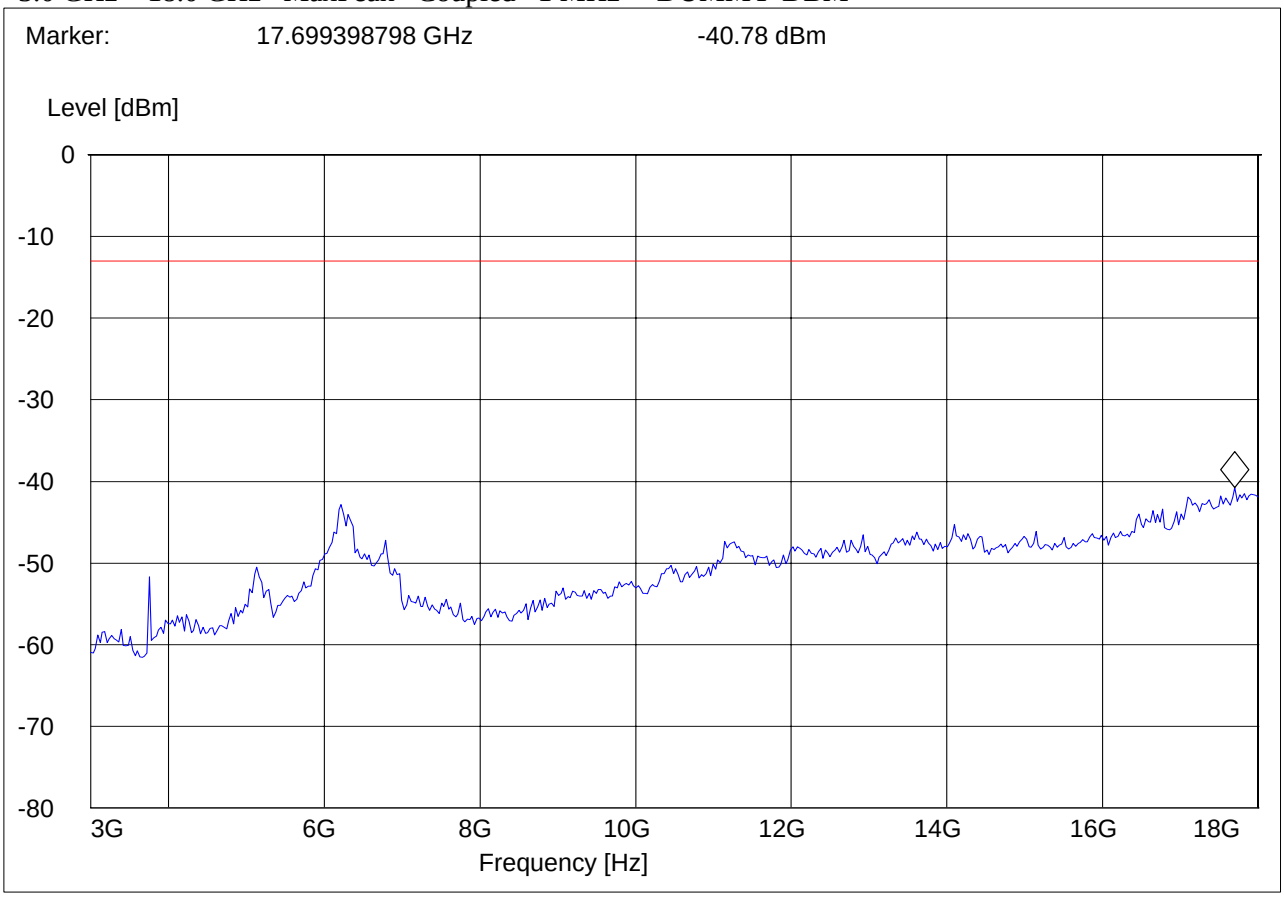


RADIATED SPURIOUS EMISSIONS(PCS 1900 FDD2)
Tx @ 1880.0MHz: 3GHz – 18GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9400
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

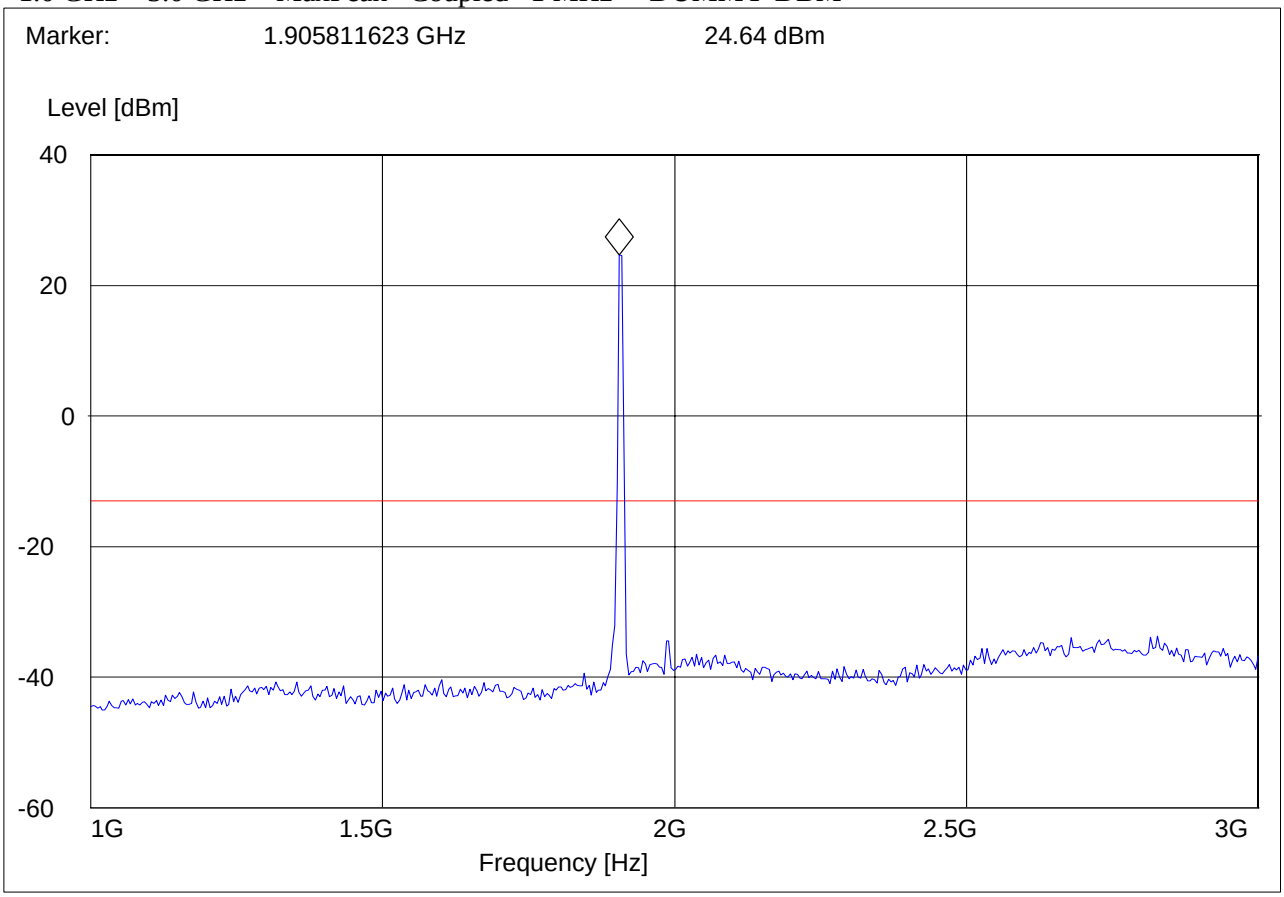


RADIATED SPURIOUS EMISSIONS(PCS 1900 FDD2)
Tx @ 1907.6MHz: 1GHz – 3GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9538
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

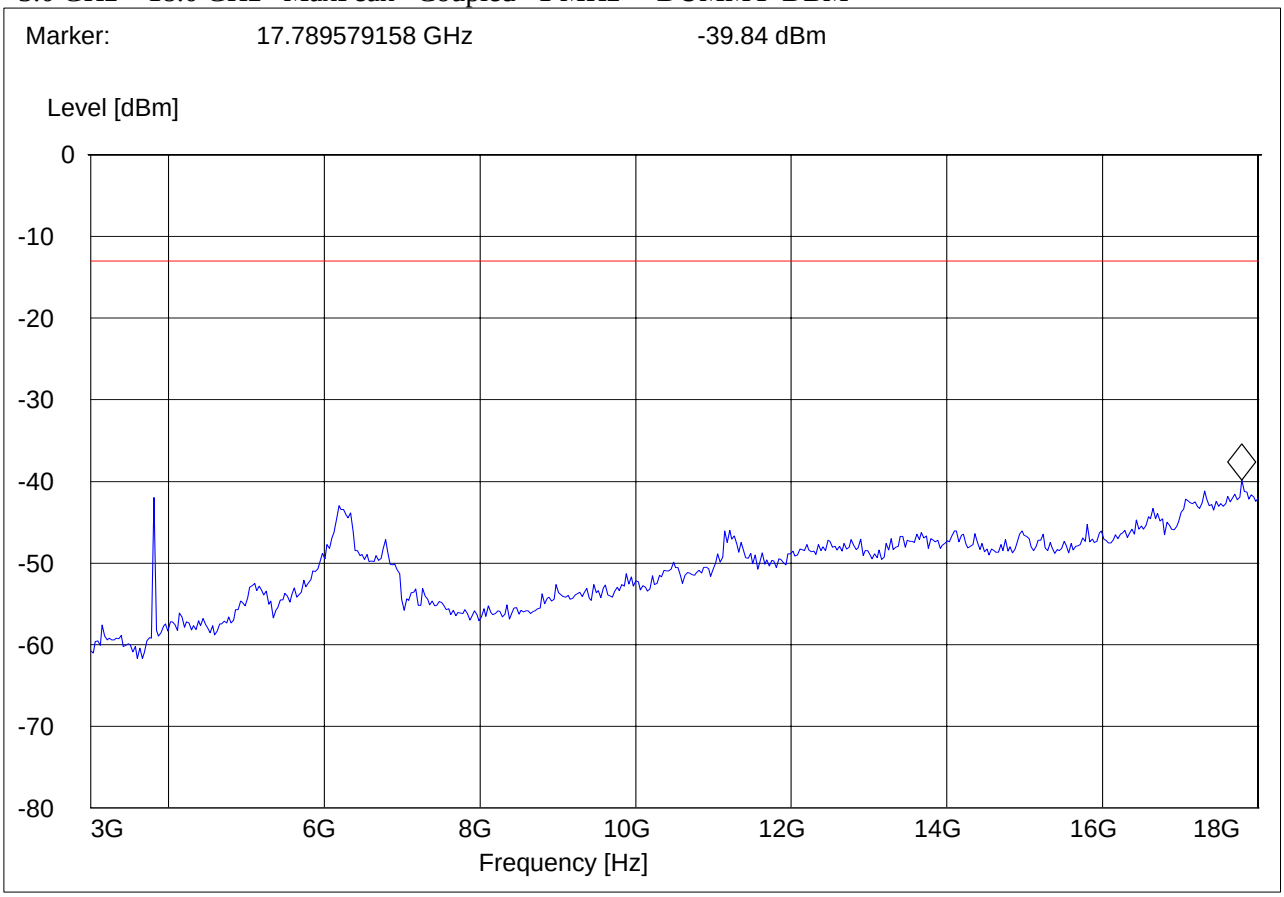


RADIATED SPURIOUS EMISSIONS(PCS 1900 FDD2)
Tx @ 1907.6MHz: 3GHz – 18GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9538
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM

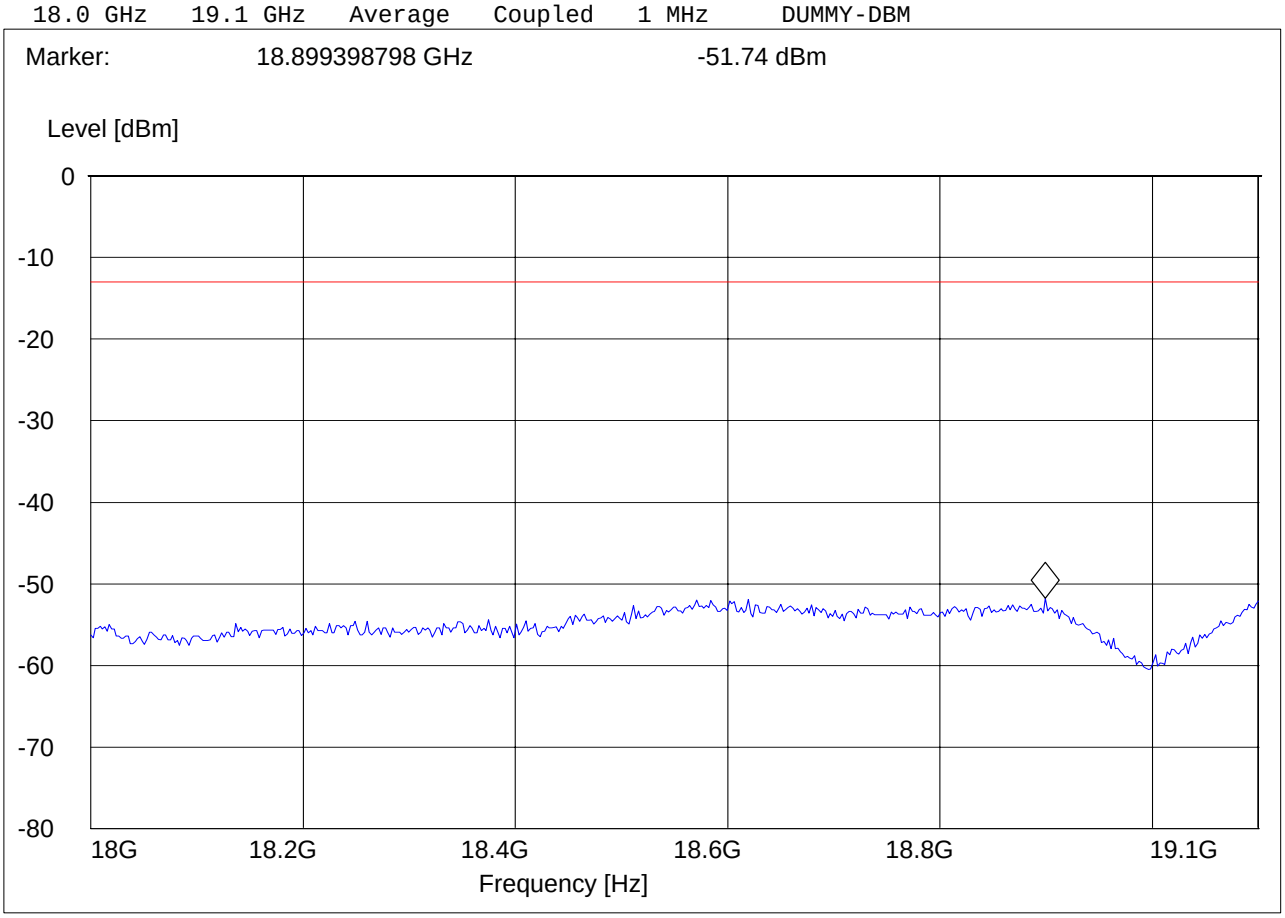


RADIATED SPURIOUS EMISSIONS(PCS 1900 FDD2)
18GHz – 19.1GHz

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9400
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "FCC 24spuri 18-19.1G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	19.1 GHz	Average	Coupled	1 MHz	DUMMY-DBM



5.3 RECEIVER RADIATED EMISSIONS § 2.1053 / RSS-132 & 133

NOTE:

1. **The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3GHz and 26.5GHz very short cable connections to the antenna was used to minimize the noise level.**

Limits **SUBCLAUSE § RSS-133**

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

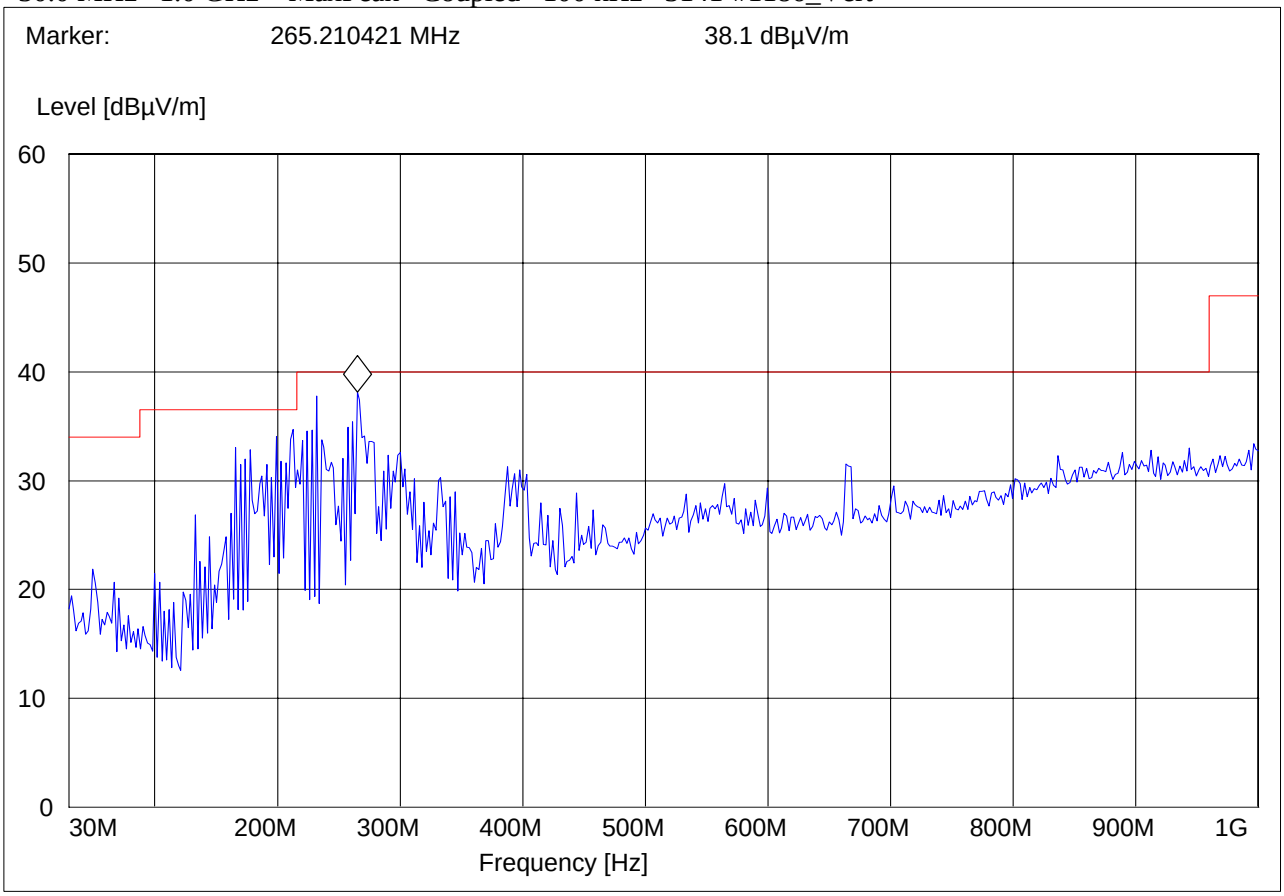
5.3.1 Receiver Spurious on EUT 1900 MHz

RECEIVER RADIATED EMISSIONS **EUT in Idle Mode: 30MHz – 1GHz**
Antenna: vertical **Note: Peak Reading Vs. Quasi-Peak Limit.**

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: GSM 1900
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC Laptop
Comments:

SWEEP TABLE: "CANADA RE_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

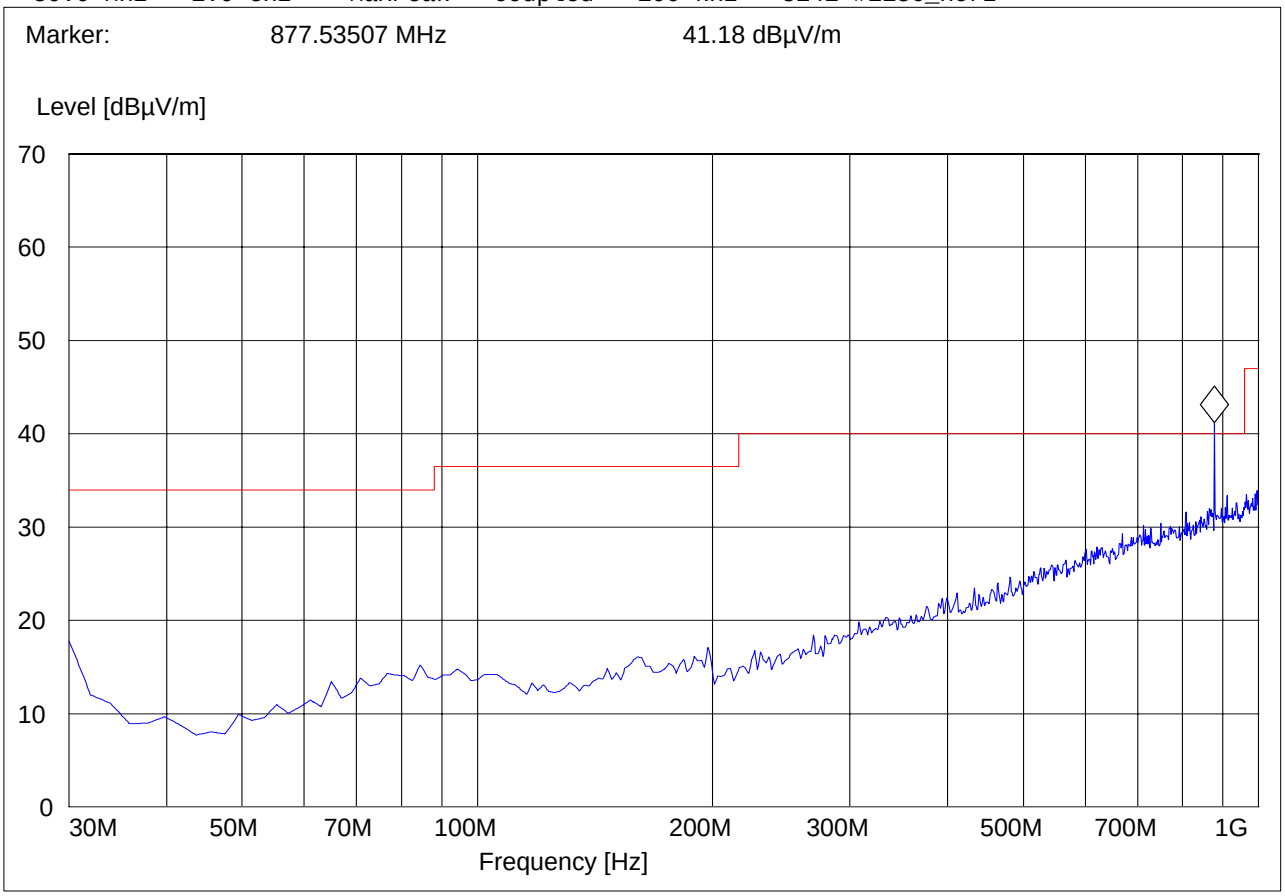


RECEIVER RADIATED EMISSIONS **EUT in Idle Mode: 30MHz – 1GHz**
Antenna: Horizontal **Note: Peak Reading Vs. Quasi-Peak Limit.**

```
EUT:              OA3541 PCMCIA Network Card
Customer::        Alcatel Lucent
Test Mode:        GSM 850Rx
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          Internal Battery
Comments:          PCMCIA Card alone. No host laptop. Marker placed on downlink.
```

SWEEP TABLE: "CANDA RE_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz

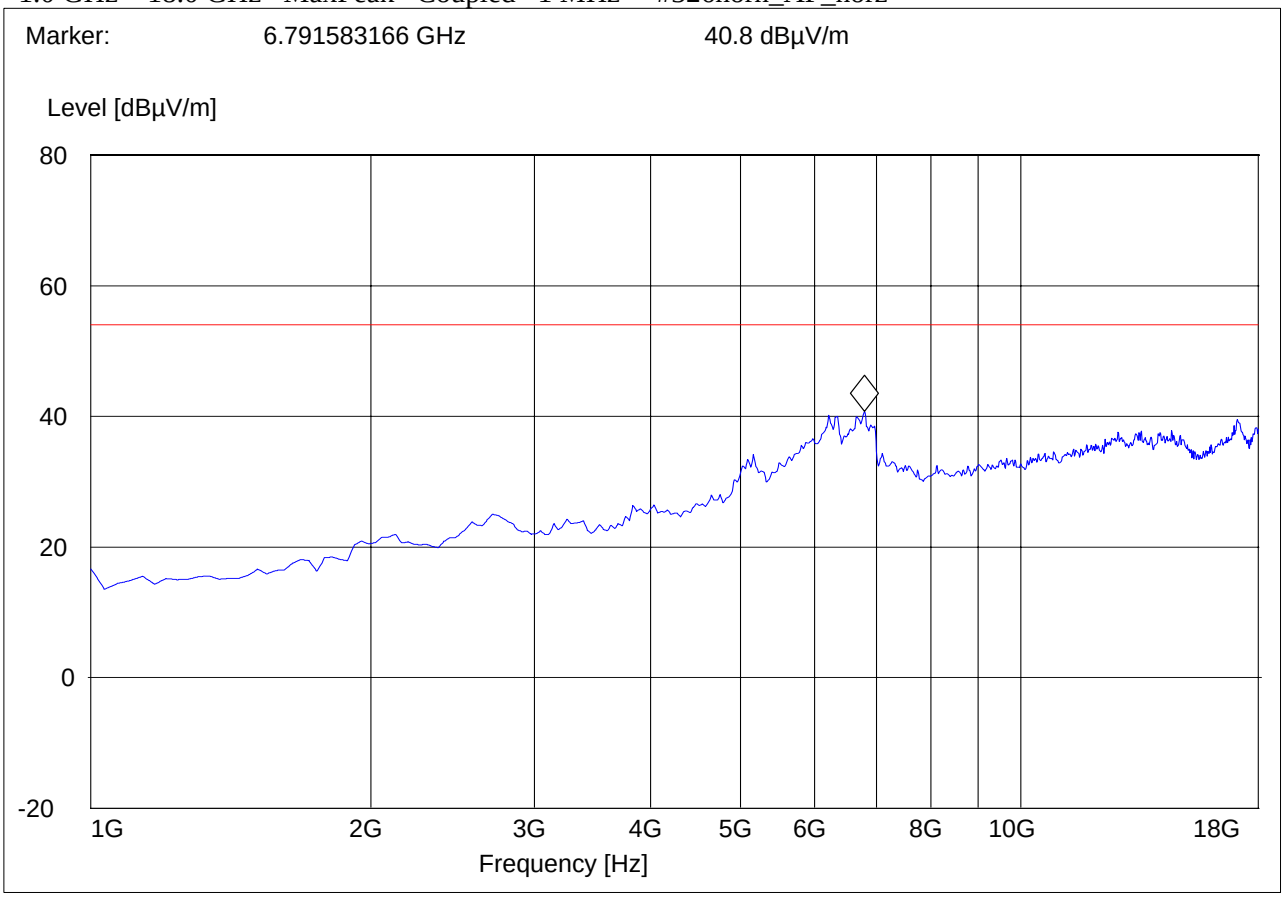


RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 1GHz – 18GHz
Note: Peak Reading Vs. Average Limit.
CETECOM Inc.

411 Dixon Landing Road; Milpitas, CA 95035

EUT / Description: OA3541 PCMCIA Network Card
Manufacturer: Alcatel Lucent
Operation Mode: GSM 850MHz; RX
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: Chris
Voltage: AC Laptop
Comments::
SWEEP TABLE: "CANADA RE_1-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

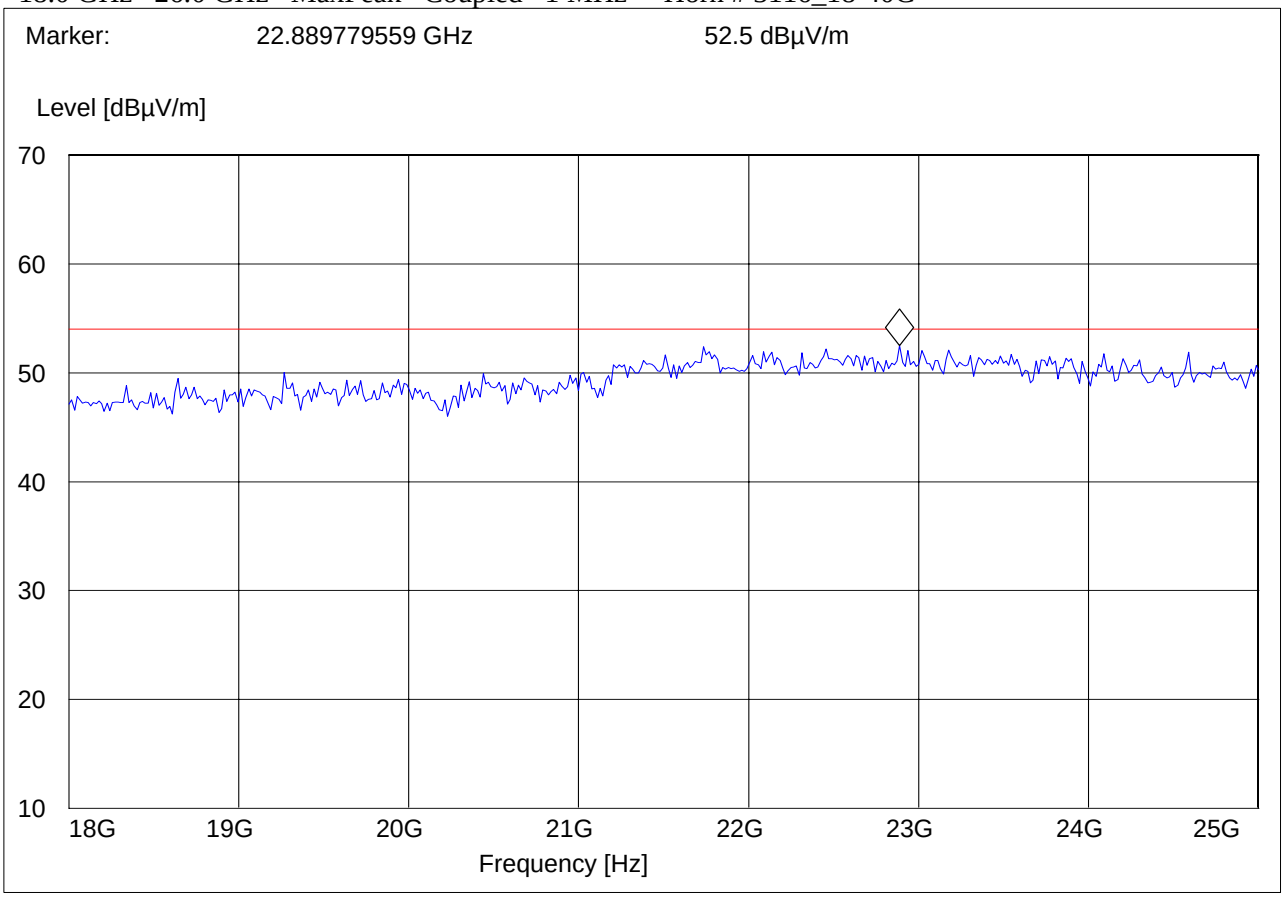


RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 18GHz – 19.1GHz
Note: Peak Reading Vs. Average Limit.

EUT: OA3541 PCMCIA Network Card
Customer:: Alcatel Lucent
Test Mode: FDD2; CH 9262
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Laptop
Comments:

SWEEP TABLE: "CANADA RE_18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



5.4 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207

5.4.1 Limits

Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)

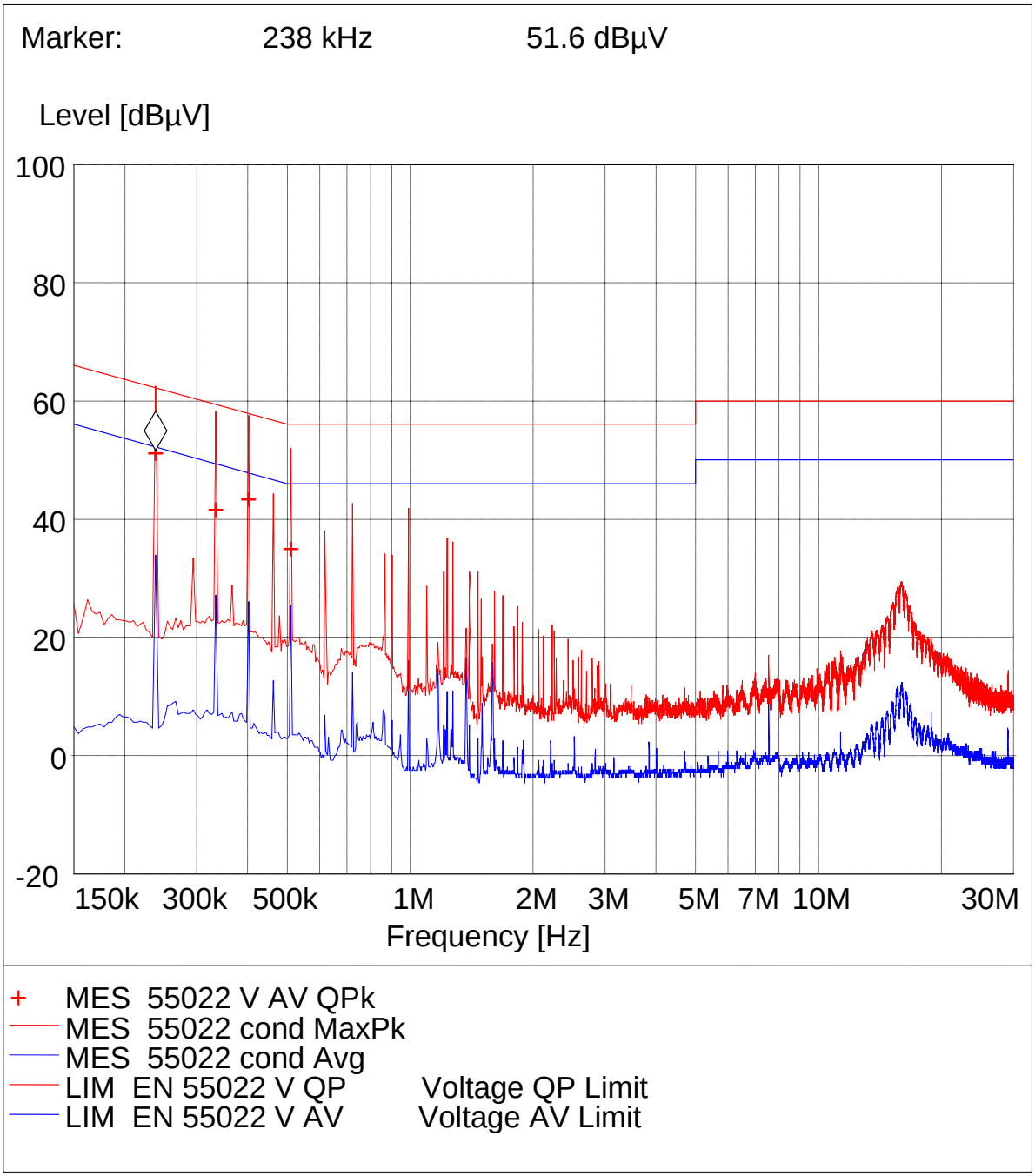
§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Limit

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHz VBW = 10KHz

GSM 850 TX: Line:
EUT: OA3541 PCMCIA Network Card
Manufacturer: Alcatel Lucent
Test Mode: GSM 850 CH190 TX
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: SAM
Power Supply: : 110v
Comments: : LINE



MEASUREMENT RESULT: "55022 V AV QPk"

8/13/2008 5:40PM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBµV	dB	dBµV	dB			
0.238000	51.60	0.1	62	10.6	1	---	OFF
0.334000	42.10	0.1	59	17.2	1	---	OFF
0.402000	43.80	0.1	58	14.1	1	---	OFF
0.510000	35.40	0.1	56	20.6	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit
4/27/1998 2:24PM

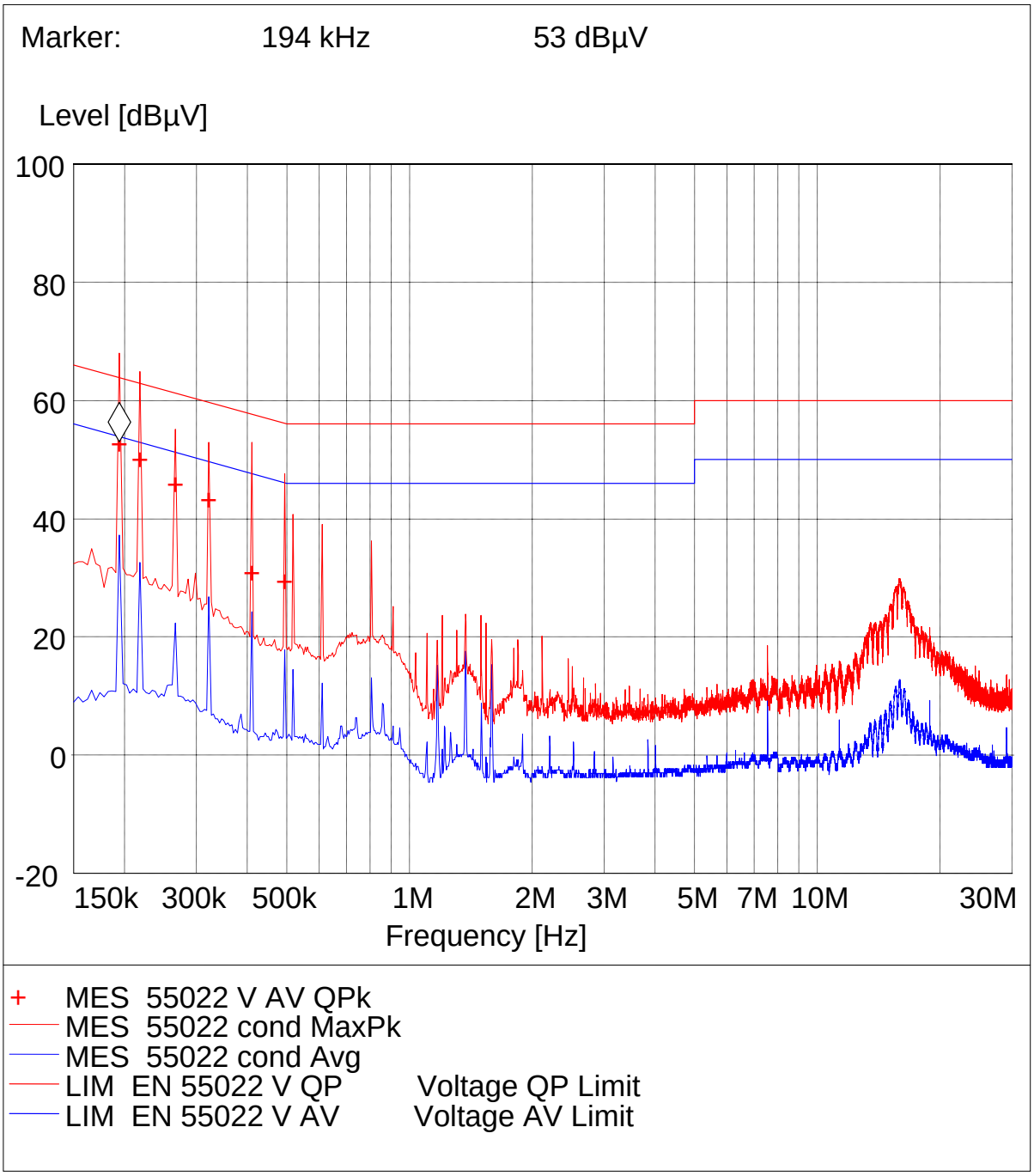
Frequency	Level
MHz	dBµV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

Short Description: Voltage QP Limit
4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

GSM 850 TX: Neutral
EUT: OA3541 PCMCIA Network Card
Manufacturer: Alcatel Lucent
Test Mode: GSM 850 TX CH190:
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: SAM
Power Supply: : 110v
Comments: : NEUTRAL



MEASUREMENT RESULT: "55022 V AV QPk"

8/13/2008 5:47PM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBµV	dB	dBµV	dB			
0.194000	53.00	0.1	64	10.8	1	---	OFF
0.218000	50.50	0.1	63	12.4	1	---	OFF
0.266000	46.20	0.1	61	15.0	1	---	OFF
0.322000	43.60	0.1	60	16.0	1	---	OFF
0.410000	31.20	0.1	58	26.4	1	---	OFF
0.494000	29.80	0.1	56	26.3	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

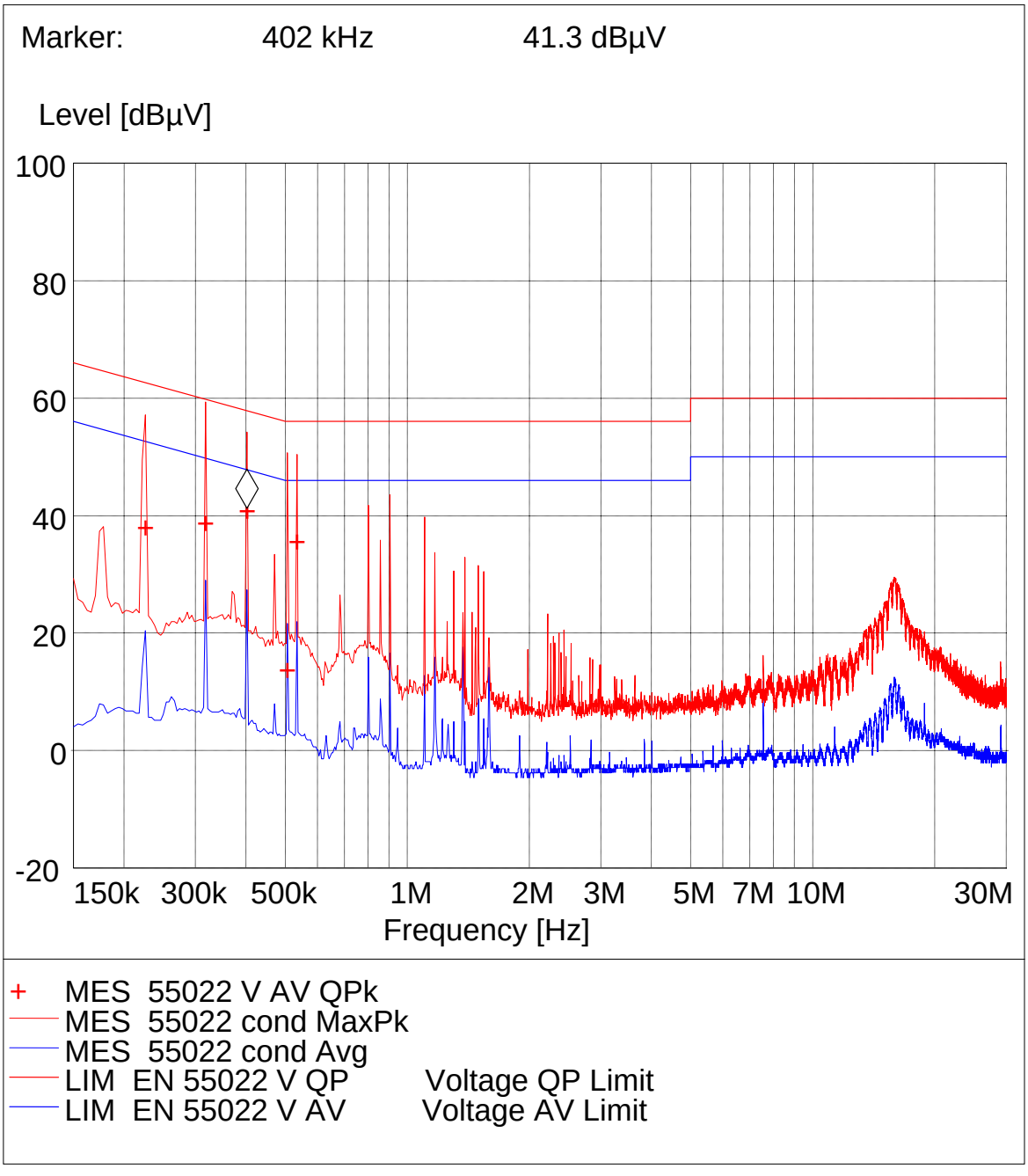
LIMIT LINE: "EN 55022 V QP"

Short Description: Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

GSM 850 RX: Line:
EUT: OA3541 PCMCIA Network Card
Manufacturer: Alcatel Lucent
Test Mode: GSM 850 ; IDLE:
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: SAM
Power Supply: : 110v
Comments: : LINE



MEASUREMENT RESULT: "55022 V AV QPk"

8/13/2008 5:58PM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBµV	dB	dBµV	dB			
0.226000	38.50	0.1	63	24.1	1	---	OFF
0.318000	39.20	0.1	60	20.6	1	---	OFF
0.402000	41.30	0.1	58	16.5	1	---	OFF
0.506000	14.20	0.1	56	41.8	1	---	OFF
0.534000	36.10	0.1	56	19.9	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

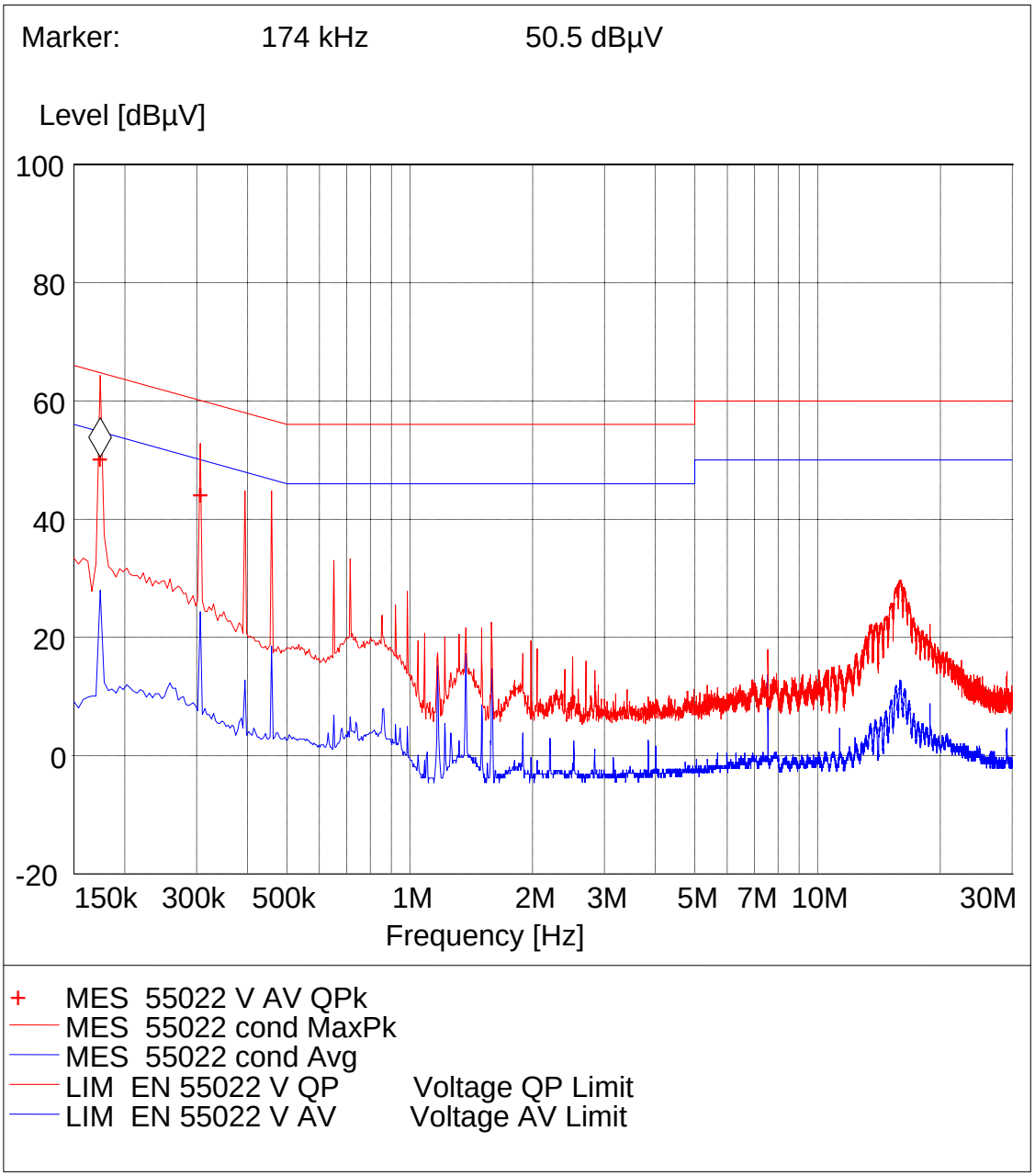
LIMIT LINE: "EN 55022 V QP"

Short Description: Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

GSM 850 RX : Neutral:
EUT: OA3541 PCMCIA Network Card
Manufacturer: Alcatel Lucent
Test Mode: GSM 850 ; IDLE
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: SAM
Power Supply: : 110v
Comments: : NEUTRAL



MEASUREMENT RESULT: "55022 V AV QPk"

8/13/2008 5:52PM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBµV	dB	dBµV	dB			
0.174000	50.50	0.0	65	14.3	1	---	OFF
0.306000	44.50	0.1	60	15.6	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

Short Description: Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2009	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	May 2009	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2009	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2009	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2009	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2009	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2009	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2009	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2009	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2009	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2009	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2009	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2009	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2010	2 years

7 References

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION,
PART 2--FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS October 1**,** 2001.

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION,
PART 22 PUBLIC MOBILE SERVICES October 1, 1998.

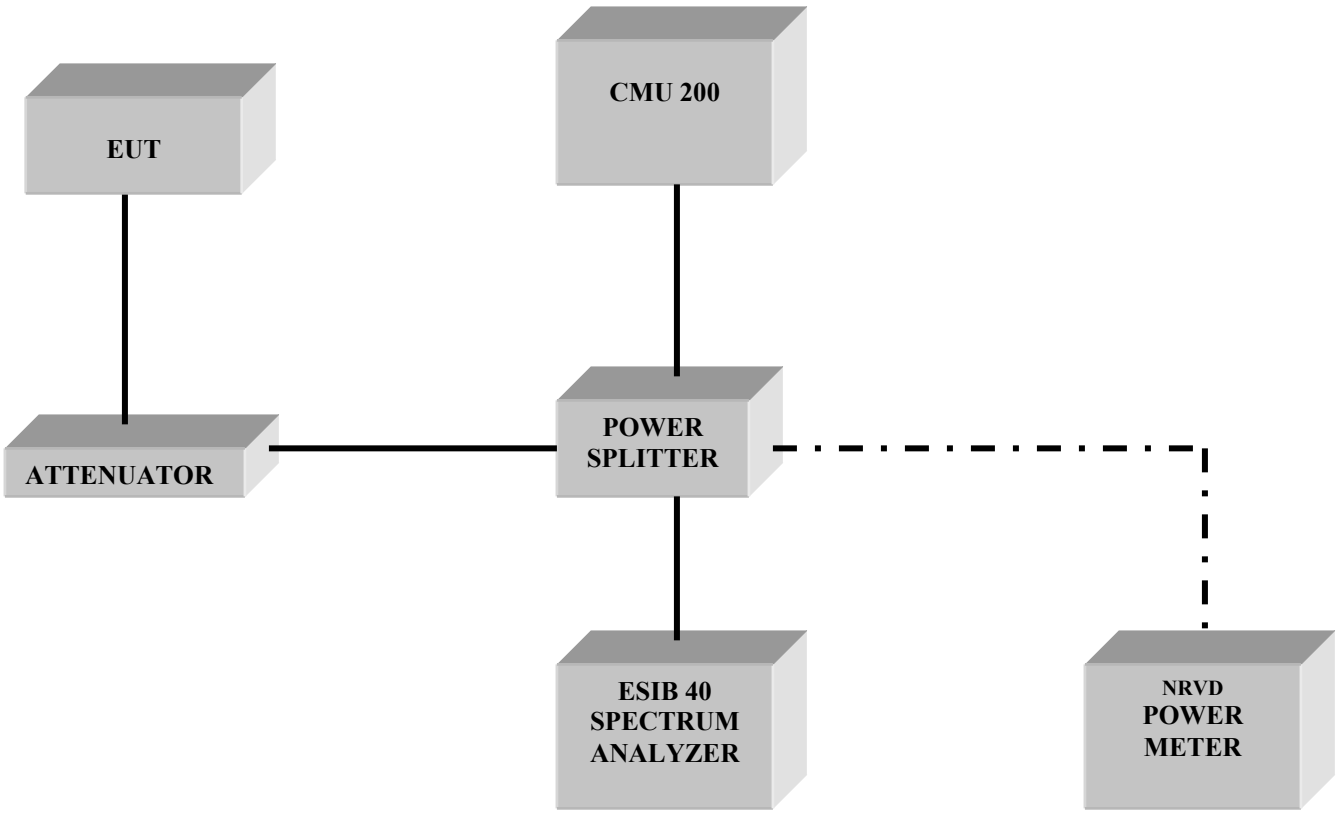
FCC Report and order 02-229 September 24, 2002.

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION,
PART 24 PERSONAL COMMUNICATIONS SERVICES October 1, 1998.

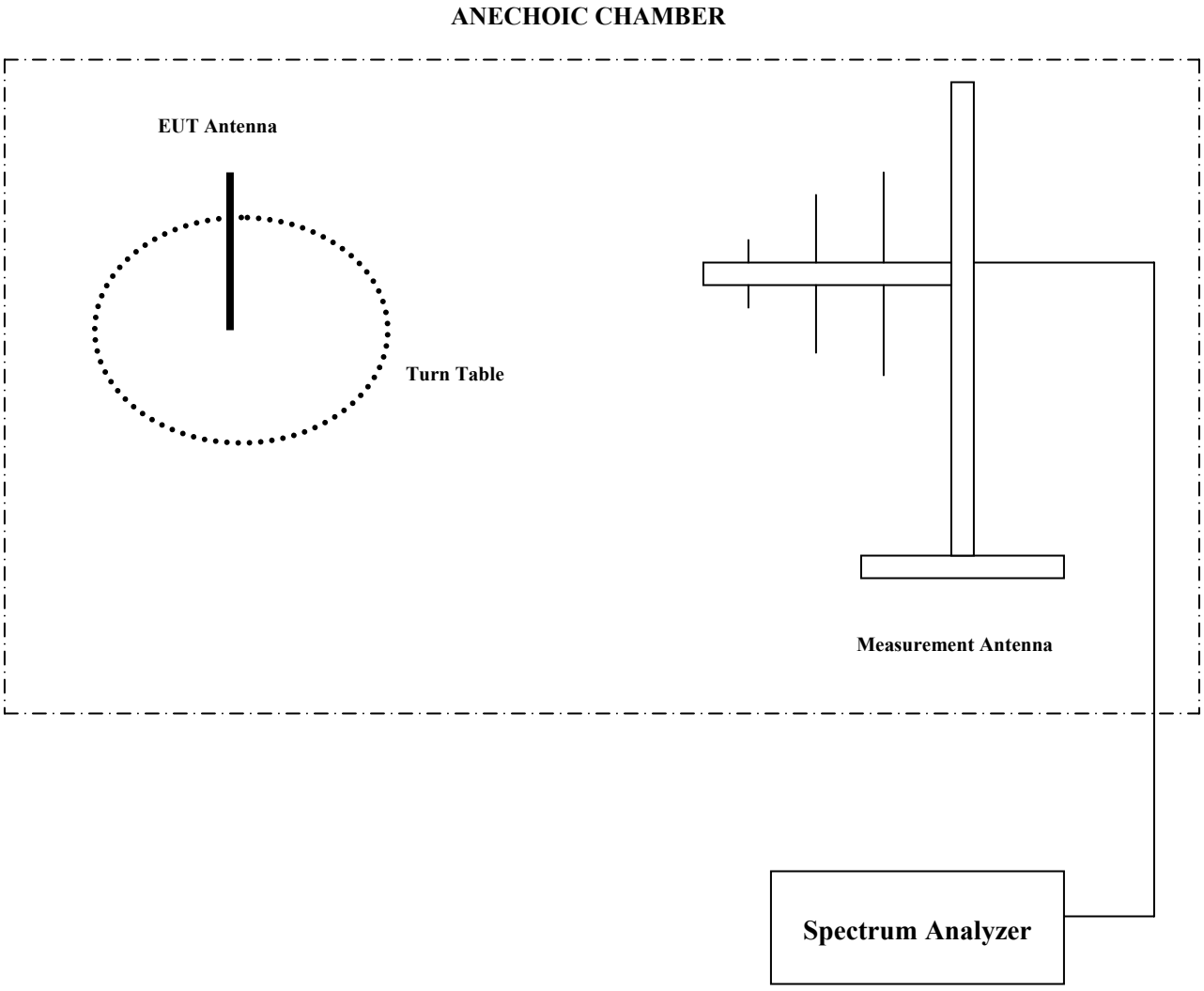
ANSI / TIA-603-C-2004 Land Mobile FM or PM Communications Equipment Measurement and Performance Standard November 7, 2002.

8 BLOCK DIAGRAMS

Conducted Testing



Radiated Testing



8 Revision History

Date	Report Name	Changes to report	Report prepared by
2008-09-08	EMC_ALCAT_015_08001_FCC22_24	Original Document	Satya Radhakrishna
2008-09-15	EMC_ALCAT_015_08001_FCC22_24_rev1	Module number changed from MC8785 to MC8790	Satya Radhakrishna
2008-09-24	EMC_ALCAT_015_08001_FCC22_24_rev2	Report referenced for conducted data changed to MC8790 FCC parts 22 24 test report.pdf from 08U11743 Report.pdf	Satya Radhakrishna
2008-09-25	EMC_ALCAT_015_08001_FCC22_24_rev3	Power conversion from dBm to watts recalculated.	Satya Radhakrishna
2008-10-02	EMC_ALCAT_015_08001_FCC22_24_rev4	Antenna information modified. Note explaining why RSE performed in GMSK alone.	Satya Radhakrishna